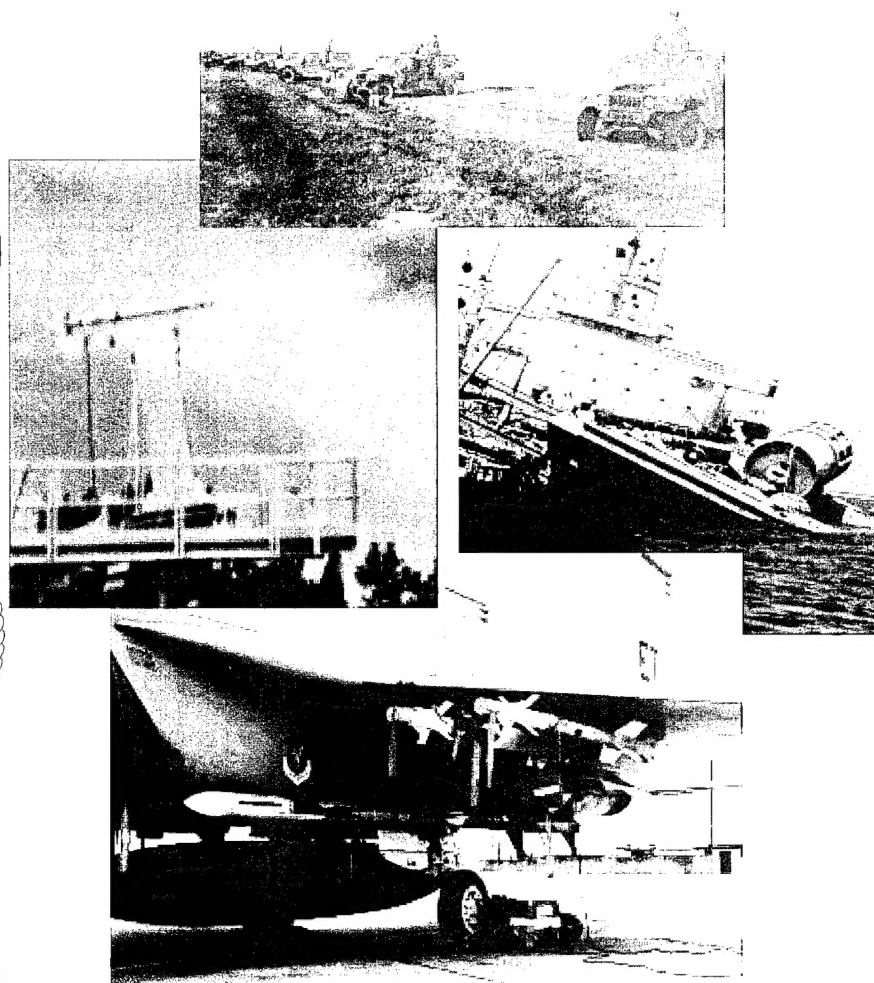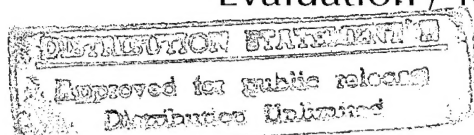# Joint Test and Evaluation Handbook

Office Of The Under Secretary Of Defense
(Acquisition and Technology) Director,
Test Systems, Engineering and
Evaluation / Test and Evaluation

JOINT TEST AND EVALUATION

HANDBOOK

1996

Approved by

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Test Systems, Engineering and Evaluation/Test and Evaluation

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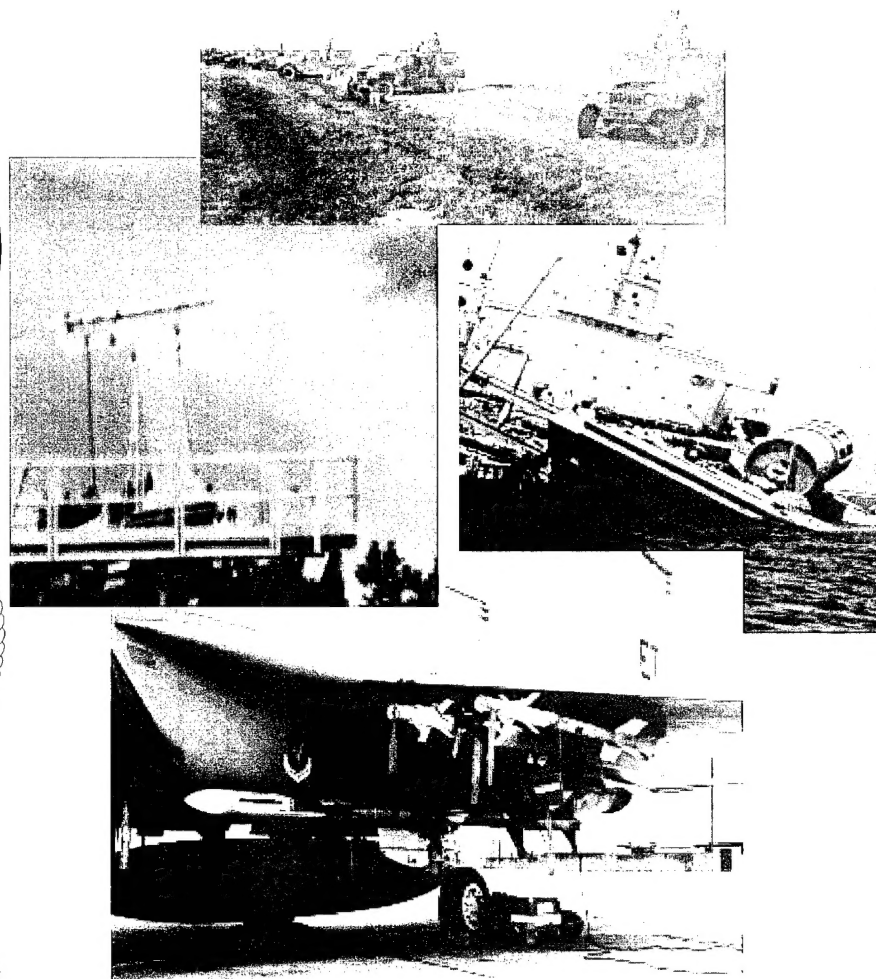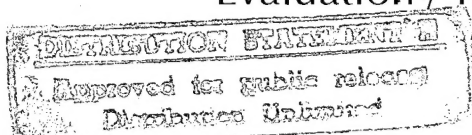# JOINT TEST AND EVALUATION

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FOREWORD

The Joint Test and Evaluation (JT&E) Program has been established to evaluate concepts and address needs and issues that occur in joint military environments. The program includes the nomination process; the Joint Feasibility Study (JFS), which determines whether selected nominations are needed and feasible; and, when such a determination is made, the execution of a JT&E by an Office of the Secretary of Defense (OSD) chartered Joint Test Force (JTF).

DoD Directive 5000.3-M-4 describes the JT&E program process, identifies the principle participants and their responsibilities, and outlines the framework within which each Service supports the program. Service support is described in detail in applicable Service directives and the Memorandum of Agreement on Multi-Service Operational Test and Evaluation and Joint Test and Evaluation which is maintained by the Services' Operational Test Agencies (OTA).

This handbook is one of three that discuss testing in the joint environment: the *Joint Test and Evaluation Nomination Handbook*, the *Joint Feasibility Study Handbook* and the *Joint Test and Evaluation Handbook*. These companion volumes are designed to provide consolidated OSD guidance and direction, information, references, and procedures to joint test directors and their staffs. These handbooks provide "how to" lessons learned based primarily upon inputs from personnel who have participated in JFSs and JTFs in various capacities.

The proponent of this handbook is the Deputy Director, Test and Evaluation.

Recommended changes or suggestions for additions should be forwarded to:

Deputy Director, Test and Evaluation
3010 Pentagon, Room 3D1080
Washington, DC 20301-3010

Richard R. Ledesma
Deputy Director
Test and Evaluation
OUSD (A&T)

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CHAPTER 1
JOINT TEST AND EVALUATION PROGRAM BACKGROUND

A. INTRODUCTION

The Department of Defense (DoD) Joint Test and Evaluation (JT&E) program originated in response to the 1970 Blue Ribbon Defense Panel Report. The panel report concluded that *"There has been, and is currently, no effective means for conducting productive joint operations tests and evaluations. The fact that some such efforts heretofore have encountered difficulties and achieved few useful results does not obviate the requirements for much needed joint operational test and evaluation (OT&E)."* The report recommended that continuing responsibility for joint testing be vested in an Office of the Secretary of Defense (OSD) staff element dedicated to test and evaluation (T&E). While the original emphasis was on joint operational T&E, evolving multi-Service needs and issues have led to an expansion of the effort to include joint developmental and operational T&Es. The JT&E program is directed by the Director, Test, Systems Engineering and Evaluation (D,T,SE&E).

The Deputy Director, Test and Evaluation (DDT&E) manages and administers the JT&E program and develops the means to ensure that productive testing is accomplished. The policies and details in the JT&E program are set forth in *DoD 5000.3-M-4, Joint Test and Evaluation Procedures Manual.* The *JT&E Procedures Manual* provides a description of the JT&E program, OSD and Service responsibilities relative to the program, and defines the JT&E nomination and selection process. Key to the management structure is the independent status of the OSD JT&E program. That is, the program is structured so that it minimizes the influence of Service biases. While JT&E activities are conducted in accordance with established joint procedures, consistency is maintained with the assigned mission of each participating Service. Responsibility for conducting each JT&E is assigned to a lead Service. The JT&E is supported by personnel and resources from the designated participating Services.

B. PURPOSE

The purpose of a JT&E is to accomplish one or more of the following:

- Assess the interoperability of Service systems in joint operations and explore potential solutions to identified problems.
- Evaluate and provide recommendations for improvements in joint technical and operational concepts.
- Develop and validate system development and testing methodologies having multi-Service application.
- Evaluate technical and operational performance of systems under realistic joint operational conditions.

The purpose of a Joint Test Force (JTF) is to plan and execute the time-sequenced test activities in the approved Analysis Plan for Assessment (APA), produce valid data, analyze

the data, and use the analysis results to address the JT&E concepts or issues.

C. JT&E PROGRAM

The JT&E program is composed of three separate but closely related activities:

1) The nomination, coordination, and approval of a proposed JT&E.
2) A joint feasibility study (JFS) to determine the need of a proposed program test design for an approved nomination.
3) The execution of those JT&Es that show a potential for significant improvements in joint capabilities.

The activities in the JT&E program are sequentially accomplished with reviews conducted at designated milestones to assure that OSD and Service resources are wisely expended and are supportable. These activities are designed to be expanded in both scope and level of detail as information and expertise are developed, thus increasing confidence in program decisions at the designated milestones. For this reason, the Joint Test Director (JTD) and staff must understand the entire JT&E program to be able to execute the JT&E in accordance with the APA and collect and analyze the data required to address the JT&E issues.

The JT&E program begins with a request for nominations from the Director, Test, Systems Engineering and Evaluation (D,T,SE&E) to the Services, Commanders in Chief (CINC), Defense Agencies, the Joint Staff, and the OSD staff. This request is made with the stipulation that nominations be forwarded to the D,T,SE&E by early March. The CINCs, Services, and

Defense Agencies develop and refine their nominations and forward them in the format prescribed in *DoD 5000.3-M-4*. Nominations must address concepts or issues that involve more than one Service and contain an explicit statement of the JT&E purpose, with expected results, and the issues to be addressed.

Upon receipt of the nominations, a JT&E Planning Committee (PC) will be convened to review and winnow the nominations and prepare the highest priority candidates for SAC review. The make-up and responsibilities of the JT&E PC are outlined in *DoD 5000.3-M-4*. The joint staff member of the JT&E PC will provide joint exercise information during nomination review and coordination.

The JT&E PC Service representatives will exchange information on Service positions, coordinate on projected resource requirements, and assist in the preparation of a nomination report that is presented to the Technical Advisory Board (TAB) and the Senior Advisory Council (SAC). *DoD 5000.3-M-4* also outlines the membership, duties, and responsibilities of the TAB and SAC. The SAC reviews the JT&E PC reports and develops recommendations as to which candidates should be approved, and prioritizes which candidates should proceed to a JFS or directly to a JT&E for planning and execution. Based on the SAC recommendations, the D,T,SE&E may approve the candidates for execution, designate the lead and participating Services, and either direct a JFS, or charter a JT&E without benefit of a JFS.

Under the oversight of OSD, the lead Service will conduct a JFS to expand and refine the candidate, assess the need and feasibility of

executing a JT&E, develop a APA, and prepare recommendations to the SAC and the D,T,SE&E relative to potential courses of action. The SAC will consider the JFS report and recommend to the D,T,SE&E whether or not the proposed JT&E should be chartered for execution. If chartered, a JTF will be established and organized to plan and execute the activities identified in the APA, analyze the results, and evaluate the JT&E concepts or issues.

Although a JFS conducted by a joint Service team is an integral part of the JT&E program, there are special circumstances that involve deviations to the normal sequence of activities. These deviations could impact the availability of personnel and resources to transition from the JFS to the JTF and the actions and activities that will be required of the JTF. The following are three deviations to the sequential JT&E process that the JTD should be aware of:

- **D,T,SE&E may elect to fund an existing joint activity to conduct the JFS.** This would occur if candidate concepts or issues were imbedded within, or closely related to, concepts or issues being addressed by an existing joint activity. This approach may require additional Service personnel augmentation to provide the required skills to fully examine the feasibility of the concept or issues in a three-year effort. In the event that this type of JFS leads to the chartering of a JT&E, the JTD can expect that only the additional military and civilian personnel who supported the JFS will be considered for transition to the JTF.

- **D,T,SE&E may elect to employ a Federally Funded Research and Development Center (FFRDC) or an independent contractor to conduct the JFS.** In this case the Services would provide select personnel to work with the FFRDC or contractor to ensure that Service concerns are adequately addressed. In the event this type of JFS leads to the chartering of a JT&E, the JTD can expect that only the Service personnel who participated in the JFS will be considered for transition to the JTF.

- **D,T,SE&E may elect to charter a JT&E directly without first conducting a JFS.** Although rare, this may occur if D,T,SE&E decides, in concert with a SAC recommendation, that the candidate involves time-sensitive concepts or issues, is not overly complex, can be resolved through a JT&E effort of less than three years, and the candidate and supporting rationale are developed to an extent that satisfies the intent and requirements of a JFS. *In this case, the JTD's immediate task will be to acquire the resources to fully develop the concepts, issues, objectives, plan of action, milestones, test concept, APA, and estimates of resources that would normally be developed during the JFS.* In this situation, the only personnel that could be considered for transition to the JTF would be those associated with the preparation and development of the candidate.

The JT&E TAB is an organization of senior civilian scientists and engineers from OSD and the Services that provides advice to the SAC, the OSD sponsors, and the JTD on technical issues related to the JT&E program. *DoD 5000.3-M-4*

outlines the membership, duties, and responsibilities of the TAB. The TAB chairman also serves as the technical advisor to, and is a nonvoting member of, the SAC. The JTD will present test plans, test results, and reports to the TAB for technical review, comments, and recommendations. *Read-ahead copies of presentations should be provided to the voting members of the TAB prior to formal TAB presentations.*

If the JT&E involves technically complex or difficult concepts or issues, the JTD should consider the establishment of a technical advisory group (TAG) to provide additional technical assistance to the JTF. *DoD 5000.3-M-4* outlines the procedures for establishing a TAG as well as their duties and responsibilities.

If the JT&E involves concepts or issues that pertain to policy, doctrine, or tactics, the JTD should consider the option of establishing a General Officer Steering Committee (GOSC). The GOSC would consist of flag officers (1-2 star level) from the Services who would advise the JTD on Service policy, doctrine, tactics, and roles/missions related to the JT&E. The organization and roles of the GOSC members would be dictated by the particular objectives of the JT&E. If established, the JTD should include the GOSC in the review cycle of JT&E planning, analysis, and preparation of reports.

The JTD should remember that the purpose of the JT&E is to address and evaluate concepts or issues. *The JT&E is, therefore, an objective evaluation of the concepts or issues and the JTF must not become an advocate of any particular concept or solution to an issue. JTF ANALYSIS MUST BE BUILT ON THE PREMISE OF OBJECTIVITY.*

CHAPTER 2
ESTABLISH AND ORGANIZE THE JTF

A. INTRODUCTION

This chapter explains the relationship of the JTF to the JT&E program and describes those actions that must be accomplished upon charter to obtain facilities, personnel, and administrative support. The chapter also addresses the functional and organizational requirements that should be considered in establishing and organizing the JTF. The JFS final report and the APA provide the foundation for the JT&E. The Feasibility Study Director (FSD) will have established and coordinated initial JTF requirements for facilities and personnel with the host installation and the Service personnel centers. These actions should provide the JTD with a facility to work from initially and a core staff of personnel who make a transition from the JFS to initiate actions for the conduct of the JT&E.

B. INITIAL ASSISTANCE

One of the first tasks of a newly appointed JTD will be to contact the lead Service, participating Service, and OSD JT&E points of contact (POC) to discuss in detail requirements, available support, reporting, and expectations. Annex C is a list of the JT&E POCs.

When the JTF is chartered, the lead and participating Service headquarters will issue an order, letter, or directive that designates the subordinate command or agency that will function as their support agent.

The JT&E nomination process involves a number of planning and coordinating activities that relate directly to JTF requirements. If the JT&E is chartered without the benefit of a JFS, the JTF will have to accomplish those program-level planning functions associated with development of the APA. In this case, the JFS Handbook is required reading for the JTD and staff and the JTF must obtain and become knowledgeable of all documents developed during the JT&E nomination and approval process. As a minimum, the following documents should be obtained from the lead Service headquarters:

JT&E nomination documents contain the description of the JT&E in terms of the problem, concepts, issues, objectives, and their utility and impact on joint effectiveness. These documents identify the anticipated users of the JT&E results and provide: a proposed program schedule/ milestones; the identification of unique hardware, software, environment, personnel, and instrumentation requirements; an outline of a test concept; an estimate of required funds and resources; known or projected shortfalls; and agencies, organizations, and CINCs concurring in the nomination. Some nomination documentation have been more complete than others. In any case, these documents are the starting point for the development of a JT&E concept and the APA. These documents will provide the JTD and staff with an understanding of the concepts or issues as seen through the eyes of the nominating command or agency.

The **JT&E planning committee (PC)** identifies opportunities for incorporation of JT&E activities into already scheduled joint or Service exercises, documents the ability of the Services to provide the necessary personnel and facilities, establishes the utility of JT&E results, and estimates the impact of these results on joint capabilities. The JT&E PC meeting minutes will also identify the major participants in the JT&E and the users of joint test products who must be included in the coordination process.

The **SAC** reviews those candidates that are recommended for approval and lists those that should proceed directly to a JT&E. The SAC recommendation for approval of a JT&E is Service and Joint Staff concurrence of the candidates issues and objectives and is an initial commitment that Service support will be available. *This concurrence will become important during the coordination of documents and recommendations as each new coordinator has a tendency to want to restructure the program and revise the issues and objectives. It is important that program concerns, issues, objectives, personnel, equipment, and costs be solidified early in the JT&E effort. The SAC minutes may be key to achieving this goal.* The SAC priority is indicative of the importance of the JT&E to DoD in the event that budget reductions occur and alternative considerations are required.

Service directives and instructions relating to JTF support are written by the headquarters staffs of the lead and participating Services to subordinate commands or agencies outlining responsibilities and priorities for providing support to the JT&E. These directives and instructions provide the JTD and the Service deputies with the authority to coordinate directly with supporting organizations to obtain facilities, administrative support, and staff personnel. These directives also provide the designated Service support agents with the authority to provide the required support.

Archive documents produced by completed JFSs and JTFs are maintained in the Air Force Operational Test and Evaluation Center (AFOTEC) library at Kirtland AFB, NM. These include numerous charters, directives, program test designs, program test plans (PTPs), test reports, final reports, and management reports. While some of these documents may not directly relate to the chartered JT&E, many problems the JTF will encounter are systemic and have been addressed and reported on by previous JTDs. Of specific interest will be the management reports that contain the lessons learned and the recommended improvement/corrective actions. The library material is available to all JTDs and their staffs. It may be beneficial for the JTD to visit the AFOTEC library at Kirtland AFB to review and determine which of the available documents may be applicable. Request for documents should be addressed to:

AFOTEC/RS
Directorate of Research Service
8500 Gibson Blvd., SE
Kirtland AFB, NM 87117-5558
Telephone: (505) 846-2574   DSN 246-2574

If the JTF is chartered as the result of a JFS, the JTD should transition all JFS documents to the JTF. Most of the planning and coordinating activities that occurred during the nomination and approval process will have been

included in the JFS report and the APA. In addition to obtaining all JFS documents, the JTF should obtain the following from the lead Service OTA POC:

JFS final report documents the necessity and feasibility of the JT&E, its scope, concept, methodologies, limitations, risks, and resource requirements. The JFS final report will also contain the recommendations of the FSD relative to the location, facility requirements, and staffing of the JTF. The JTD should also obtain a list of the coordination accomplished by the JFS relative to JTF facility and resource requirements.

APA defines and formalizes *what* actions are required to accomplish the JT&E, *who* is responsible for the required tasks and activities, *when* and *where* the test activities or events will be conducted, and *what* resources will be required. The specifics of *how* each of the JT&E activities will be accomplished will be developed in a test plan for each activity or event.

JTF charter is the authority for the JTD to proceed with staffing, planning, execution, analysis, and reporting of the JT&E. The charter also provides authority for the JTF to establish direct contact with participating agencies to obtain the required support.

C. INITIAL REQUIREMENTS

The framework for Service support for JTFs is *DoD Instruction 5000.2, Defense Acquisition Program Procedures,* and the Memorandum of Agreement (MOA) between the Service OTAs, *MOA on MOT&E and JT&E.* One of the initial tasks of the newly appointed JTD should be to contact the lead and participating Service headquarters, OTA, and OSD JT&E POCs to discuss the transition of JFS personnel and assets to the JTF, the availability of Service and OSD support, reporting requirements, and expectations. Annex C is a list of JT&E POCs. In the case of the Navy and Marine Corps, the Service headquarters POC and the OTA POC have been designated as the same person. Liaison should be established with the POCs at the Service headquarters and OTA levels, as both will be involved in providing personnel and resources. When the JTF is chartered, the headquarters of the lead Service will issue an order, letter, or directive that designates the subordinate commands or agencies that will function as their support agents for conduct of the JT&E. The headquarters of the participating Services will issue an order, letter, or directive designating subordinate commands or agencies to function as their support agents that the JTD can call on for assistance.

When a JTF is chartered, the JTD will be faced with a myriad of requirements that include establishing and organizing the JTF, obtaining documents and directives, and establishing liaison with POCs. Initial emphasis will center on:

- Obtaining an adequate facility.
- Obtaining qualified staff and support personnel in a timely manner.
- Obtaining support resources (communications and automated data processing (ADP) equipment).
- Refining the JTF budget and securing the required funds.
- Organizing the JTF and developing a work breakdown structure (WBS) and schedule.

- Establishing support and coordination POCs with the Services, Joint Staff and OSD.
- Providing for JTF security.
- Submitting request for resources to the Services (See Chapter 4 for Details).

The JTD is directly responsible to the Deputy Director, Test and Evaluation (DDT&E) for the organization, management and execution of the JT&E. The JTD is authorized by DDT&E to establish direct communications with Service or DoD agencies to obtain assistance or support required for the JTF. As a minimum, initiating the JT&E effort will involve establishing an organizational structure, and obtaining adequate facilities, qualified staffing, and support resources. These activities are discussed in the following sections.

Obtain Adequate Facilities

The JTF charter will stipulate where the JTF will be located. *The lead Service is responsible for providing the JTF with facilities, including building(s), furniture, and administrative equipment.* Facilities include such things as heat, light, safes, computers, and access to network bulletin boards and on-line services (e.g. MILNET/TECNET). Facilities to support deployed operations or detachments will be arranged through negotiations with the host installation at the deployed or detachment location. It is unlikely that the JFS facilities will be adequate to house the fully staffed JTF. The JFS facility, however, should be adequate to house the initial JTF cadre, thus providing the JTD time to negotiate with the host installation for the required space. The FSD should have developed an estimate of JTF facility requirements and coordinated these requirements with the host installation. The JTD and the lead Service OTA POC should negotiate with the host installation to obtain the required facilities. These negotiations will normally be formalized in an Inter-Service Support Agreement (ISA) between the JTD and the host installation.

Assuming the JTF will consist of 40-60 personnel, the JTD should acquire the use of 6000-9500 sq ft of usable office floor space (approximately 150 sq ft per person), preferably in a single building. While most of the space will be used for offices and individual work areas, one conference area of at least 500 sq ft should be available that could also be used as a collective work area. The JTD should also consider the requirement for another 1000-1500 sq ft of separate space to house secure automated data processing (ADP) equipment (if such is required). Most JTFs will involve some sensitive or classified materials. If so, controlled access to the JTF facility and storage of the classified materials must be considered. If the JTF involves information and discussions that require access to a Special Compartmented Information Facility (SCIF), this requirement should be arranged through the host installation or OTA POC.

Obtain Qualified Staffing

One of the first and most challenging tasks for the JTD will be to obtain full staffing with qualified and experienced personnel in a timely manner. Retention of these personnel for the duration of the JTF may also be a problem that must be considered. Estimated manning requirements for the JTF were established by the JFS and were a major factor in the JTF chartering

decision. When the SAC recommended approval of the JT&E, each member on the SAC committed his Service to provide the required resources to complete the JT&E. The Service personnel systems, however, can take up to 10-14 months to provide permanent change of station (PCS) personnel. The JTF may have to operate for roughly half of its life cycle before full manning is provided. The JTD, therefore, must quickly review the manning requirements established by the JFS, revise them as required, and submit them to the Service POCs for entry into the Service personnel systems. The JTD should recognize that even with early JFS coordination of JTF manning requirements with the Service personnel centers, several months may be required before PCS personnel actually arrive on station. In such cases, and particularly if the required skills are critical during the initial phases of the JT&E, the JTD should attempt to acquire personnel with requisite skills on a temporary basis until the permanent personnel arrive.

Designation as the lead Service carries the responsibility of supporting the JTF with the director, one of the deputies, the majority of Service personnel, Civil Service personnel, administrative personnel, and assistance in the areas of secretarial support, travel, contracting, personnel, administration, comptroller, supply, and logistics (see *DoD 5000.3-M-4*). The participating Services will provide Service deputies and a balanced percentage of personnel, both PCS and temporary duty (TDY), for the conduct of the JT&E. Staffing these requirements depends on the ability of the Service personnel systems to respond to the JTF requirements. While the procedures for staffing JTFs are being established, it is sometimes difficult for the Services to provide qualified personnel in a timely manner. Available, rather than fully-qualified personnel, are sometimes assigned to these positions. The JTD should insist on the assignment of fully-qualified personnel and all should be on a full-time basis at the JTF location.

The JTF will transition through three distinct phases. Each will involve unique tasks with unique personnel requirements. The three phases are planning, executing the planned activities, and selling the JTF developed products. The planning phase will require personnel with expertise and experience in the mission field, in test planning, and the identification, coordination, and acquisition of test resources. The test execution phase will require personnel with operational and technical expertise and experience in test execution, data collection, and data analysis. The selling phase will require personnel with expertise in report writing and the preparation and presentation of briefings to senior management personnel. The JTD should be prepared to refine JTF manning requirements as the JTF matures through these three phases.

The time allowed for completion of a JT&E precludes delays in obtaining personnel, the training of unqualified personnel, or the inefficiencies inherent in the use of part-time or additional-duty personnel. If the Service personnel systems cannot accommodate JTF personnel requirements in a timely manner, the JTD should consider the use of qualified contractor personnel to support the JTF. Contractor support can be obtained by either modifying existing contracts or by using the DESA OMNIBUS support contract. Either will

involve the development, coordination, and approval of a task statement specifically addressing the JTF requirements.

Since each JTF's mission, scope, and program is different, associated personnel requirements will vary. While requirements may differ, past JTFs have revealed a series of common functions for which trained and experienced personnel with the following skills will be required.

Joint Test Director (JTD) should be an 0-6 (possibly a GS-15) with test and evaluation experience and a background in the technical aspects of the JT&E. Joint experience is desired. Command experience is necessary owing to the problems of establishing a new command. The requirements to brief at the flag level also dictate that the JTD be an 0-6. Senior 0-5s are acceptable if they have promotion potential and the required T&E and technical experience. It is expected that the FSD transition to and become the JTD.

Program management personnel would ideally be the JTD and deputy test directors (DTD) who transitioned from the JFS to the JTF. If not, OSD and the Services will nominate, select and fill the JTD and DTD positions. The JTF management team (JTD, DTDs, and Chief of Staff) should consist of experienced personnel (preferably 0-5/0-6 level) and reflect a balanced mix of management and leadership experience, joint experience, operational experience within the JT&E mission area, test experience, and expertise in the functions of the JTF organization. All personnel should be respected within the Services and their field of expertise. The Chief of Staff should be experienced in program administration and the JT&E processes and requirements. The Chief of Staff should also serve as the focal point of functional and support activities to ensure continuity during all daily and test activities.

Technical personnel with test experience in all areas covered by the testing issues are critical. The technical advisor should be a subject matter expert in the JT&E mission area and should have experience in system testing, analysis and statistics. The technical advisor should also have experience in the management of technical teams as his primary function will be to review and resolve technical differences of opinion in order to maintain the focus of the JTF test and analysis activities on the program issues.

Test management personnel will be required with experience in planning and directing operational tests, particularly field tests. They should be knowledgeable of operational and logistical factors associated with the conduct of such testing. Personnel best qualified for these positions are those who have performed test management functions with one of the Service OTAs, Service tests, multi-Service operational tests and evaluations (MOT&Es), or JT&Es.

Military operations personnel will be required who possess knowledge and experience in the operational aspects of the JT&E subject matter. These individuals should understand the JT&E concepts and issues from a joint perspective or at least from the perspective of their respective Services. They should also be versed in Service missions, doctrine, tactics, and procedures that are applicable to the JT&E operational issues.

Test and evaluation personnel will be required who are experienced in concept development and test planning, execution, and reporting. This experience should include the development and management of test schedules and budgets; the identification, acquisition, and management of test resources; and data collection and management. These personnel should also be able to plan for test analysis, develop field test plans and procedures, plan for test execution, and write test reports.

Analysis personnel will be required with experience in operations research, systems analysis or related scientific disciplines and in the application of these skills to the JT&E. This experience should include developing test designs, defining evaluation criteria, determining statistical requirements, identifying data analysis requirements and procedures, using automated and manual analysis tools, and applying modeling and simulation techniques to JT&E analysis requirements.

Engineering/Instrumentation personnel may be required with an engineering background and operational experience in the identification and application of various instrumentations employed in operational testing. The experience required includes the employment of test systems and the integration of test instrumentation system and associated interface equipment. Engineering experience may be required to identify the technical parameters associated with obtaining data to satisfy the test objectives and the types of instrumentation that will be required to collect these data. If the JT&E involves field operations, persons with skills in communications systems and data transfer will be required, including micro-wave relays, cellular phones, radios, and radio relays.

Intelligence personnel will be required with training and experience in threat analysis and both tactical and strategic intelligence systems and employment procedures. These personnel will be required for those JT&E activities that involve test scenarios and particularly those involving the employment of threat simulators and systems.

Database development personnel will be required with training and experience in the development of databases and the documentation, maintenance, and configuration control of databases and related software products. These personnel should also have experience in test data management, test data reduction, and test data analysis support.

Resource management personnel will be required who are trained and experienced in supply, logistics, personnel administration and budget/fiscal matters. While the JTF may receive a portion of this type of support from outside agencies (from the host installation), the JTF will need core resource management personnel for day-to-day operations and for the coordination of support from outside agencies. These personnel should also have experience in property administration, tracking procurement activities, transferring property, providing audit trails for transactions, and the handling of shipping/ receiving documents. The size of this personnel requirement will depend on the scope of the JT&E, the size of the JTF, the quantity of equipment to be acquired and maintained, and the number of JTF facilities and detachments to be maintained and supported.

The tracking, management, and reporting of JT&E fiscal matters is extremely important. Therefore, it is important that each JTF have a financial manager, preferably experienced in OSD and Service budgeting, funding, and accounting. The duties of the financial manager will include the transfer of fiscal authorizations and the tracking of funding commitments, obligations, and disbursements.

In addition to financial management and pay, all JTFs will have purchasing requirements that range from paper clips to computers, as well as vehicles and other major assets purchased through several means. Although JTF military/civilian pay will be supported through the lead and participating Service finance centers, the JTF should have someone on the staff with expertise regarding the Service pay systems.

Security personnel may be required who are trained and have experience in physical and operational security (OPSEC). OPSEC considerations can be a major factor in the conduct of JT&E activities. Technical assistance in the security area may be available through DESA to include developing security classification guides, establishing required security levels for personnel, and obtaining personnel security billets.

Administration personnel will be required with experience ranging from the establishment and maintenance of files to the use of computers and word processing, graphics and spreadsheet software programs. The JTF should not underestimate this requirement. A considerable amount of the JTF work will involve the development and maintenance of test related documentation and the preparation of reports. The JTF may also have the requirement for an editor and someone experienced in computer-based desktop illustration and publishing systems.

Obtain Support Resources

The lead Service is responsible for providing most support resources for the JTF to include furniture and administrative equipment. **Figure 2-1** is an overview of Service and OSD responsibilities for providing JTF resources.

Existing and suitable resources that can be made available from the lead Service will be provided. Resource requirements that cannot be provided from Service assets will be brought to the attention of DDT&E. DESA may be able to provide some of these resources from equipment that was purchased and utilized by prior JT&Es. OSD funds may be provided to acquire unique or special equipment required for the JT&E and support resources not otherwise available.

The provision of adequate ADP and communications equipment is the responsibility of the lead Service. Identifying equipment requirements is the responsibility of the JTD. The JTD should establish and coordinate these requirements with the lead Service OTA and the OSD JT&E Coordinator early in the program to determine what equipment can be provided. Considerations in developing these requirements include when the equipment will be needed and for how long. Most installations or agencies designated to support the JTF will have some ADP and communications equipment on hand

CATEGORY	EXPENSES	OSD	SERVICES
1. JTD and Staff	A. Travel	X	
	B. Per Diem	X	
	C. Civilian/Military Pay		X
	D. Personal Computers	X(1)	X
	E. Office Copier		X
	F. Office Equipment		X(1)(4)
	G. Supplies		X(4)
	H. Office Facilities		X
	I. Technical Advisors (TAB/TAG)(TDY)	X	
	J. Other Training – Tech, Staff (TDY)	X	
	K. Reports, Printing and Production		X
2. Contractor	A. Test Planning, Tech Support	X	
	B. Simulation/Model	X	
3. Training	A. Training For Data Collectors And White Controllers	X	(1)
	B. Test Unique Doctrine And Tactics Training For Red Players	X	(1)
	C. Tactics Training For Blue Players		X
4. Facilities	A. Buildings – Construction, Lease, Alteration		X(1)
	B. Utilities		X
5. Test Support And Resources	A. Hardware/ADP	X	
	B. Range Costs	X(2)	
	C. Instrumentation (Unique)	X(2)	
	D. Surrogates		X
	E. Site Preparation	X	
	F. Base Operating Support		X
	G. Player Communications Support		X
	H. Player Vehicle Leasing		X
	I. Photo/Visual Support	NEGOTIABLE	
	J. OPSEC Survey/Risk Management		X
	K. Environmental Studies	X	
	L. Player Supplies		X
	M. Red/Blue Force Travel/Per Diem		X
	N. White Force Travel/Per Diem		X
	O. Test Vehicle Modification And Transportation	X	
	P. Surrogate Modification And Transportation	X	
	Q. Flying Hours		X
	R. Fuel		X
	S. Parts And Transportation		X
	T. Munitions		X
	U. Transport Of Munitions	X	
	V. Data Collection, Analysis, Store	X	
	W. Industrial Fund Flight Hours	X	
	X. Simulation Costs, Modifications, Transportation		X(3)

1. Existing and suitable Service resources, facilities, etc., which can be made available will be provided; however, additional costs for JT&E program requirements and resources should be negotiated with OSD.
2. Existing and suitable Service range/test facilities which can be made available will be provided; however, any reimbursement costs will be funded by OSD.
3. Existing and suitable Service simulation capabilities which can be made available will be provided; however, other additional costs including modification, transportation and maintenance will be funded by OSD.
4. DESA may be able to provide, otherwise the lead Service provides.

Figure 2-1. Responsibilities for Providing JT&E Resources

that can be made available. DESA is also a potential source for such equipment. Equipment that cannot be provided by the Services or DESA must be acquired through lease or purchase and this can take some time. In order to preclude impacts on the program, the JTD should establish and coordinate JTF ADP and communications requirements with the Service OTA and OSD JT&E POCs as soon as possible. This will allow the JTD to identify funds and initiate actions to obtain equipment that the Services cannot provide.

ADP requirements will be based on the complexity and functional requirements of the JT&E, the size and structure of the JTF and the number of operating locations. Database hardware and software will be a major consideration in developing the ADP requirements, including storage, speed of processing, number of users, and geographic separation. In establishing the ADP requirements, the JTD should also consider such things as interface capabilities with OSD and the Services. The capability to exchange and manipulate data between organizations or agencies involved in the JT&E may be very helpful.

The JTD should recognize that acquiring some of this equipment may take considerable time. ADP equipment requirements must be considered and acted on early in the program.

Communications requirements should include sufficient telephone instruments and lines to handle the expected number of incoming and outgoing calls. The telephone system should have a call forwarding capability and

a message recording capability that can be accessed from an external telephone to listen to the recorded messages. The telephone system should also have the capability for both inbound and outbound commercial and DSN calls. Both secure and non-secure FAX/modem and internet (MILNET/TELNET) capabilities should be considered. The JTD should recognize that acquiring telephone lines on a military installation can sometimes take four to six weeks.

Funds

Funding for the JTF will be in accordance with chapter 251 of *DoD 7110.1-M, Budget Guidance Manual*. More specifically DDT&E will disperse PE 0605804D funds to pay for costs that are unique to the JTF and the Services will fund for the daily operation of activities. If discussions arise relative to the funding of any JTF activity or support, the JTD should immediately contact the OSD JT&E Coordinator for clarification and resolution.

OSD funds will be used to pay for travel/per diem (JTF staff), contractor support, and the cost of specialized equipment, instrumentation and facilities required to support JT&E activities. OSD will initially provide these funds based on the resource estimates that were established in the JFS. These funds may be committed during both the fiscal year of appropriation and the next fiscal year, as they are two-year funds. Although there are many exceptions to the use of all types of funds, OSD funds are perhaps the most varied in terms of their administrative requirements. The JTD should, therefore, work closely with the servicing financial activities.

Service funds are appropriated for expenses necessary for the daily Operations and Maintenance (O&M) of JTF activities. The lead Service will fund those costs associated with facilities, personnel and administrative support. Among the items covered by O&M funds are salaries for civilian personnel, travel (other than the JTF staff), transportation, utilities and rents, Service-owned equipment maintenance, supplies, printing, reproduction and communications equipment. O&M funds must generally be obligated during the fiscal year for which they are appropriated. They do not have to be dispersed in that same year.

Although a budget estimate for the JT&E was developed by the JFS, it should be revised by the JTD and forwarded to DDT&E within 60 days following JTF charter. Significant funding beyond that which is required for initial JTF startup will be dependent on the revised JTF budget estimate. The revised budget will include cost estimates separated into the major categories of travel, per diem, and contractor costs. The budget revision will be reviewed by DDT&E and, after discussion with the JTD, will be approved and the funding provided. DDT&E may provide funds, either in full or in increments, for the conduct of the JT&E. The JT&E, like all DoD programs, is subject to annual congressional budget cuts and reduced funding. Variations in JT&E program funding will naturally be felt by the JTF.

Once the JTF budget is approved and funding is provided, the JTD must closely manage JTF expenditures. The JTF's commitments and expenditures are of particular interest to DDT&E. The JTD will provide monthly financial status reports to DDT&E to include commitments and expenditures by category and funding balance. The JTD is responsible for operating within the bounds of the revised budget. If there are expenses that are not in the revised budget, the JTD must obtain the concurrence of DDT&E prior to committing funds to them. Service approval will be obtained for any expenses that will be funded by the Services.

The JTD should establish a relationship with the host installation comptroller early in the program to identify support needs for reimbursable programs and establish applicable fiscal accounts. The JTD should advise DDT&E and the appropriate Service agencies of these accounts so that OSD and Service funds can be directed accordingly.

Managers at all levels in DoD track funds by the three phases in the accounting cycle: *commitment, obligation, and expenditure.* The JTD and JTF financial manager must, therefore, understand the phases, the impact of financial related actions taken upon them, the documentation required to execute the financial programs and be able to report on the status of individual JTF actions in terms of the accounting cycle. The following is a brief overview of the three phases of fiscal accountability.

Commitment is an administrative reservation of funds showing an intent to incur an obligation. Commitments are based on firm requisitions, purchase requests, or allied documents which will require actual contracting actions, or other authorized written evidence that indicates intention to incur obligations. Commitments involve a certification of funds availability that attests that funds are currently

available to cover potential obligations and that these obligations are proper and valid charges to the funds cited. Commitments are made against funds available for the period in which the obligation is to be incurred. Decommitment of funds should be accomplished to increase available funds anytime a requirement no longer exists, funds cannot be obligated within the prescribed time frame (fiscal year for Service funds and two years for OSD PE 658D4D funds), or receipt of a credit commitment document.

Obligation is a documented transaction that constitutes a legal requirement for furnishing goods or services and a corresponding requirement to pay for those items upon completion or delivery. An obligation is the amount of an order placed, a contract awarded, services received, or similar transaction during a given period that will require payments during either the same or future periods. Obligations should be recorded only when documentary evidence supports the amount of obligation. All obligation documents should be sent promptly to the servicing accounting and finance officer for recording once an obligation has been incurred. An annual appropriation is available for obligation only during the fiscal year specified in the appropriations act. In order to obligate an annual appropriation, the contract must be made within the fiscal year to be charged against, the supplies or services must serve a bona fide need of that fiscal year, and the obligation cannot exceed the available allotment. Obligations may be incurred at any time during the period of a multiple year appropriation if the related action concerns an item authorized in the appropriation act and the obligation does not exceed the approved allotment.

Expenditure occurs when an invoice or similar document has been received and payment has been made against it to satisfy an obligation. Accrued expenditures are charges to an appropriation during a period that requires funds either be dispersed or set aside for payment. Expenditures accrue regardless of when cash payments are made and are recorded based on documentary evidence including bills of lading, contractor invoices, and obligating documents. A recordable accrued expenditure includes the amount of work accomplished in spite of the stage of completion, shipping status, or lack of acceptance by the Government.

The difference between the funding received by fiscal year and the portion that has been set aside as committed, obligated, or expended is the available balance left to conduct operations during the lifetime of the funds. It is important to remember that the combined total of the available balance, prior expenditures, current obligations, and commitments can not exceed the authorized funding by source and appropriation. More importantly, it is a violation of public law (Anti-Deficiency Act) if expenditures and legal obligations exceed the available funding of each separate funding document. Additionally, funds cannot be commingled, i.e., OSD and Service funds accounted for as one.

Given the fluctuations that will most likely occur in the JT&E program budget and, in turn, the JTF's budget, the JTD must be prepared for less funding than requested each year. A major consideration in budget cuts that a JTF may incur, is the JTF's progress and success to date in the conduct of the JT&E and the Services' perception of the JT&E's ability to satisfy Service needs. If there is an appearance that the

JT&E will contribute little to the needs of the Services, Joint Staff, or OSD, it is likely that the JT&E will be subjected to more strenuous budget cuts. For this reason, it is important for the JTF to gain and maintain Service, Joint Staff, and OSD interest in the JT&E and the product(s) that will be produced.

Establish an Organizational Structure

While most organizational structures can be tailored to accommodate a JTF, a simple structure based on JTF functions will probably work best. The selected organizational structure should provide a clear chain of responsibility and accountability for each function, activity, and task. **Figure 2-2** is an example of such an organizational structure. The organizational structure should be tailored to take into account the unique nature and technical complexity of the JTF. The JTD has the ultimate responsibility for the successful completion of the JT&E on time and within budget. The JTD is a purple-suited position and he or she must maintain both an OSD and joint perspective of the JT&E. The Service deputies are dual-hatted positions and should serve as both the senior representatives from their Services and as directors of JTF functional divisions.

Someone within the JTF should function as the focal point for resolving differences in technical ideas and opinions in order to maintain the focus of JTF efforts on the chartered mission. This can be accomplished by the designation of a technical advisor. In some cases, the JTD may function as the technical advisor. The JTD must recognize, however, that immersion in the

technical aspects of the JTF could be at the expense of management functions.

A Chief of Staff position should also be considered. The Chief of Staff could function as the deputy test director during JTD absences and should be responsible for JTF administrative functions to include the preparation and oversight of JTF reports and briefings. The JTD will report to DDT&E and will be assisted by the Service deputies.

The specific responsibilities of the JTD, Service Deputies, Chief of Staff, and technical advisor are:

JTD
- Establish, organize, and supervise the JTF team.
- Lead, manage, and supervise all facets of the JTF.
- Ensure the JTF is conducted to accomplish its mission on schedule and within budget.
- Develop a JTF work breakdown structure (WBS) and schedule.
- Develop, maintain, and update requirements for JTF funding and Service support.
- Submit these requirements to DDT&E and the Services as appropriate.
- Control funds designated for JTF activities and account to DDT&E for their use.
- Monitor Service expenditures related to the JTF.
- Prepare and submit reports as appropriate, including in process reviews, a JTF final report, and a JTF management report.
- Market JTF products if they have merit.
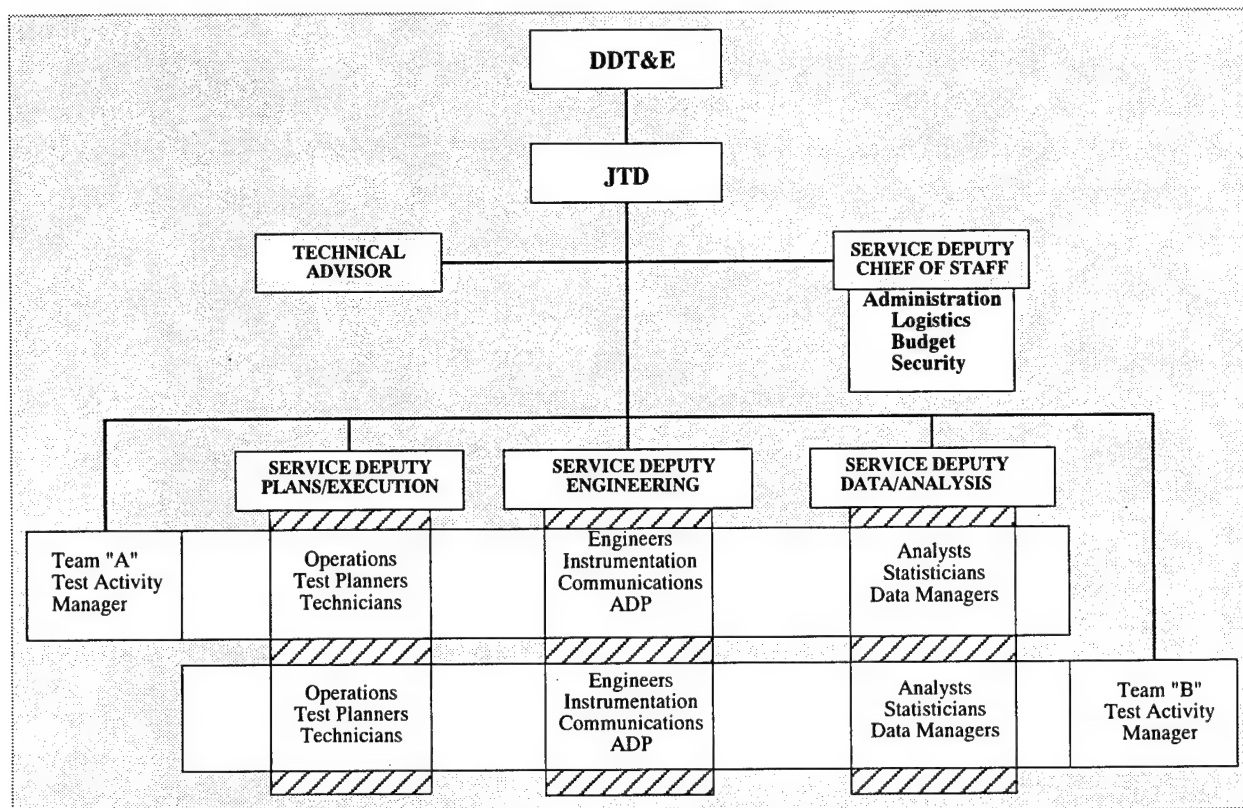
Figure 2-2. Example of an Organizational Structure

Service deputies

- Support the JTD in the conduct of the JT&E
- Ensure that own Service concerns are adequately addressed by the JTF.
- Identify Service resource and personnel expertise required for execution of the JTF and ensure their availability.
- Coordinate within own Service to obtain required information and resources and obtain Service coordination on JTF documents and products.
- Provide advice and expertise to the JTD on Service issues and areas of interest.
- Obtain own Service coordination relative to JTF planning, conclusions, recommendations, and products.
- Provide progress and significant action reports to own Service.

Chief of staff

- Maintain coordination chain and POC list for JTF produced documents.
- Oversee JTF administrative, fiscal, logistics, and personnel functions.
- Prepare financial and progress reports to DDT&E.
- Prepare and coordinate JTF documents and reports.
- Prepare and coordinate JTF briefings.
- Distribute read-ahead copies of briefings to responsible agencies.

Technical advisor

- Provide technical advice to the JTD, DTDs, and directors of functional divisions.
- Effect technical interface with TAB members.

- Resolve technical differences of opinion relative to JT&E activities.
- Conduct technical reviews of test plans to assure they focus on the JT&E concepts and issues.
- Conduct technical reviews of all JTF analysis, findings, conclusions, and reports.

Program Security

Most JTFs will involve access to or the production of sensitive or classified materials. If so, the JTD must establish procedures for the complete security of JTF functions. These procedures should include consideration for the establishment of controlled access areas; the positive identification and control of personnel in the controlled access areas; the receipt, storage, transmittal, reproduction, and destruction of classified documents; communications and ADP security; the control of classified containers and the container combinations; personnel security clearances; and facility security checks. Service security manuals, *DoD 5220.22-M* and *DoD R5200.1-R* provide detailed information relative to the Government Information Security Program and the minimum requirements to prevent the unauthorized disclosure of sensitive or classified information. The JTD should consider the requirement for the development of a JTF security plan that addresses all aspects of security for JTF activities.

The JTF may require access to Sensitive Compartmented Information (SCI). If so, the JTD must ensure that such billets are available when needed either through an existing Special Security Office (SSO) or DESA to support the requirement.

Similarly, if access to substantial amounts of intelligence information is required, the JTF should establish an account with the Defense Intelligence Agency (DIA) for that purpose. For access to crypto information, a communications security (COMSEC) account with the National Security Agency (NSA) should be established. Finally, if JTF generated material could be provided to foreign governments, the JTD should appoint a foreign release officer to assure compliance with existing exchange agreements. Guidance and assistance in these areas can be obtained by contacting the OSD JT&E Coordinator.

Another consideration associated with classified or sensitive projects is that of marking newly created documents. The classification of these documents or portions of the documents must be based on the information they contain or reveal. Classification authority will normally be derived from original documents. If the JTF involves the development of classified material, and it is deemed appropriate, OSD will appoint the JTD as an Original Classification Authority (OCA). Upon JTF close down, the OCA should assure that this authority is passed to OSD for all documents where OCA was exercised so that future classification issues can be addressed.

Each Service has its own unique requirements for security classification guides (SCGs). The JTF should use Service unique or establish joint security classification guides when possible. An outline for a SCG, which can be adapted to meet the needs of a JTF, is in Annex J.

CHAPTER 3
JOINT TEST PLANNING AND EXECUTION

A. INTRODUCTION

Once an initial JTF cadre has been established and the required actions initiated to acquire permanent facilities and support resources, the JTD must direct JTF efforts towards the planning and execution of the JT&E. *If the JTF was chartered without a JFS,* the JTD should develop an APA (see Chapter 2 in the JFS Handbook relative to those actions required to develop an APA) in addition to those JT&E planning and execution actions outlined in this chapter. *If the JTF was charted as the result of a JFS,* JTF planning should focus on those actions required to plan, coordinate and execute those test activities outlined in the APA, analyze the data collected, resolve the JT&E issues and develop the JT&E products.

This chapter provides an overview of those activities and actions required to plan and execute a JT&E that was chartered as a result of a JFS. Part One addresses program level planning, Part Two addresses specific test activity planning and execution, and Part Three addresses program reporting requirements.

PART ONE
JOINT TEST & EVALUATION PLANNING

Joint testing is a program of interrelated and interdependent test activities and events that are planned and conducted to address, resolve, or satisfy specific program issues and objectives. The JFS developed an APA that outlines *what*

actions and resources are required to accomplish the JT&E. JTF planning requirements will center on defining the test activities and events in the APA in terms of *how they will be accomplished*, *refining the specific resource requirements* for each and specifying *how the data* will be *collected, aggregated, and analyzed* at the program level to address or resolve the issues or achieve the objectives. JTF planning to satisfy these requirements will be incorporated into a program level document. The primary difference between the APA and the program level document will be in the level of detail resulting from more detailed planning for the conduct and execution of the JT&E activities.

Documentation of the JTF planning can be accomplished in a number of ways. The most common is to expand the level of detail in the APA into a Program Test Plan (PTP). A suggested outline for a PTP is contained in Annex L. The PTP should be an extension of the APA and address those planning items or actions that have been significantly changed or revised. It is not the intent of the suggested PTP outline that the PTP be duplicative of items sufficiently covered in the APA. The program level Data Management and Analysis Plan (DMAP) can be developed either as an annex to the PTP or as a stand-alone document. If the JTD considers the APA to be of sufficient detail to satisfy JTF program level planning requirements, he or she may elect to document JTF planning in a program level DMAP. A suggested outline for a program level DMAP is contained in Annex L. In rare

cases, the JTD may elect to document JTF planning in the individual site or event test plans/DMAPs. This option would only be used when the APA (and data management and analysis methodology) is in sufficient detail to satisfy program level requirements relative to the aggregation and analysis of all test activity data. The JTD will obtain DDT&E approval if JTF planning is documented in any form other than a PTP.

The factors to be considered in JTF program level planning are discussed in the remaining parts of this chapter.

B. STUDY AND FULLY UNDER-STAND THE JFS FINAL REPORT, THE APA, AND APPLICABLE JFS DOCUMENTS

An initial step in JT&E planning is to review and understand the documents that led to the chartering of the JTF. Section B in Chapter 1 describes the documents that should have been transitioned to the JTF as soon as the JTF was chartered. If these documents are not readily available, the JTD should request them from the OTA JT&E POCs. The JFS final report and APA were the primary documents that the SAC and D,T,SE&E relied on for information in making their decision to charter the JTF. A major factor in the chartering decision was the JFS conclusion that the test activities and events in the APA were technically sound and that the resources to accomplish them would be available. Thus, the APA is the foundation for JTF planning. Personnel involved in JTF planning must fully understand the JFS documents, specifically the APA and the coordination involved in its preparation.

If the JTF core staff is made up of personnel that transitioned from the JFS, they will be familiar with the APA and related documents. If not, the JTD and core staff must become completely knowledgeable of the concepts, issues and objectives in the JFS final report as they provide the JTF planners with a real world view of the situation or problem. *The JTF planners must retain an unbiased and joint focus on the situation or problem and the doctrine and policies associated with the JT&E. JTF planners must not become advocates of the proposed solution in the APA.*

C. DEVELOP A JT&E MANAGEMENT PLAN AND SCHEDULE

The JTD should develop a Work Breakdown Structure (WBS) and schedule for the JT&E that is based on the required activities and the availability of personnel and resources. The format and content of the WBS will vary depending on the JTF missions and its technical complexity. **Figure 3-1** is an example of a WBS for a JTF.

The WBS should be coupled to the JT&E schedule to identify milestone reviews at key points in the program. The JTD will coordinate major changes in the JT&E that occur between the scheduled milestone reviews with DDT&E. **Figure 3-2** is an example of a JTF WBS with suggested milestones scheduled for:

- A DDT&E review of the JTF facilities, organization, and WBS.
- An annual TAB/DDT&E review of JT&E progress.
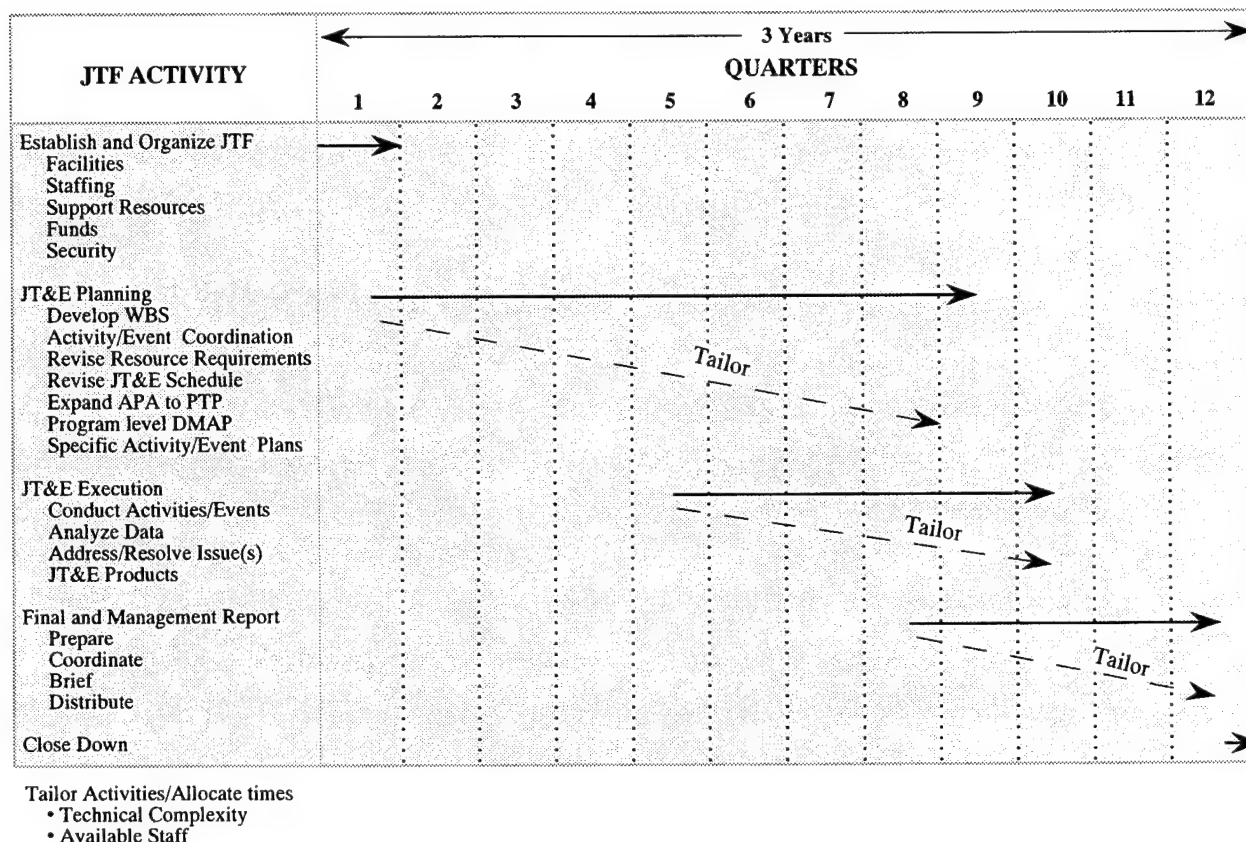
Figure 3-1. Example of a JTF WBS/Schedule

The figure shows a table with columns:

JTF ACTIVITY	3 Years QUARTERS											
	1	2	3	4	5	6	7	8	9	10	11	12

Establish and Organize JTF
  Facilities
  Staffing
  Support Resources
  Funds
  Security

JT&E Planning
  Develop WBS
  Activity/Event Coordination
  Revise Resource Requirements
  Revise JT&E Schedule
  Expand APA to PTP
  Program level DMAP
  Specific Activity/Event Plans

Tailor

JT&E Execution
  Conduct Activities/Events
  Analyze Data
  Address/Resolve Issue(s)
  JT&E Products

Tailor

Final and Management Report
  Prepare
  Coordinate
  Brief
  Distribute

Tailor

Close Down

Tailor Activities/Allocate times
  • Technical Complexity
  • Available Staff

• A TAB/DDT&E/SAC review of the JT&E final report.

The JTD should forward the WBS and JT&E schedule to DDT&E *within 60 days* after charter for approval. Reviews and progress of the JT&E will be based on this schedule. The JT&E schedule developed by the JFS was based on best available information at the time and could change considerably as the JTF develops and coordinates the plans for specific test activities. Changes to the JT&E schedule should be anticipated and coordinated with DDT&E as they occur. The combination of the WBS and schedule of JT&E activities and milestones is the *JTF management plan.*

D. VALIDATE OR REFINE THE JFS COORDINATION CHAIN

The JFS should have determined and established a coordination chain, identified the POCs, and determined who has signature authority for the coordination of JFS documents. In most cases, the coordination chain for the JTF will be similar to the one developed by the JFS. The JTF should verify the JFS coordination chain in terms of currency and applicability and establish a coordination chain for JTF documents. Development of the coordination chain will allow the JTF to establish relationships with the POCs. The revised coordination chain should be used exclusively for

JTF ACTIVITY

JTF ACTIVITY	QUARTERS
	1 2 3 4 5 6 7 8 9 10 11 12

OSD Charters JTF

Establish/Organize JTF
    Facilities
    Staffing
    Support Resources
    Funding

JT&E Planning
    Manage Plan (WBS)
    Activity/Event Coord
    Revise Resource Req
    Revise JT&E Sched
    Expand APA to PTP
    DMAP
    Activity/ Event Plans

JT&E Execution
    Conduct Activities/Events
    Analyze Data
    Address Resolve Issue(s)
    JT&E Products

Final Report
Manage Report
Close Down

△ Milestone Reviews   △(1)   △(2)   △(2)   △(2,3)
    1. DDT&E
    2. TAB/DDT&E
    3. SAC

Figure 3-2. Example of JT&E Review Milestones

the coordination of JTF produced documents. The established POC relationships will be helpful in obtaining Service resources and support.

E. REFINE THE APA

The major components of the APA should be reviewed to determine if they are still adequate. If not, the JTF should revise each accordingly.

Issues and Objectives

The JT&E issues and objectives developed during the JFS were the foundation of the APA. It is possible that the JTF coordination chain may include organizations not involved in the JFS and these organizations may insist on changes or modifications. Any changes or modifications to

the JT&E issues or objectives should be resolved by the JTF as quickly as possible as they may have a profound effect on JT&E planning. In any event, the JTF should verify the currency and accuracy of the JT&E issues and objectives in the APA and coordinate any proposed changes or revisions with DDT&E (with the advice of the TAB). As the JTF matures, situations may arise that require the JT&E issues or objectives be refined. In such cases, the changes or revisions should be recoordinated with all agencies and organizations in the JTF coordination chain and approved by DDT&E.

Scenario

The scenario in the APA should be reviewed and validated by the operational and intelligence communities. If an existing and validated

scenario was used (one that conforms to defense planning guidance), the JTF should review the scenario to assure it is still valid in terms of the program issues and objectives. If a validated scenario was modified, the JTF should initiate the required actions to obtain DIA approval of the revised scenario. In the unlikely event that a unique scenario was proposed in the APA, the JTF review should reconsider the use of that scenario. If there is no alternative, the JTF should initiate the required actions to obtain DIA approval of the unique scenario and should be prepared to modify the scenario and related test activities as necessary to obtain DIA approval.

JT&E Activity Coordination

The JFS program schedule was based on coordination with OSD, Joint Staff, the CINCs, and the Services relative to the potential use of test ranges or facilities or participation in scheduled exercises. The JTF must validate and formalize the requirement for use of these resources or participation in these exercises with the facility or exercise manager. Frequently, coordination in terms of *potential use* of a facility or resource will differ from coordination for the *actual use* of a facility or resource. Annex G contains information relative to the use of test ranges and facilities.

The coordination for use of a range or test facility should be in the form of a Program Initiation Document (PID) that officially introduces the JT&E program to the supporting range or test facility. Although range and facility requirements are included in the consolidated resource estimate (CRE) and were coordinated by Service representatives during the JT&E

chartering process, the range or facility managers will take no action on these requirements until a PID is received. At this stage of JTF planning, a preliminary PID should be submitted to ensure range or facility availability. PIDs are completed using *Universal Documentation System (UDS) Document 501-79* and the supporting agency instructions. The range or facility manager will provide the JTF with a *statement of capability* as acceptance of responsibilities that have been outlined in the PID.

The coordination for participation in scheduled exercises must be coordinated directly with the organization or agency responsible for planning and conducting the exercise. The JTF should remember that exercises are planned to achieve specific goals and JTF participation will generally be on a *non-interference basis*. Coordination for participation will involve in-depth discussions relative to potential impacts on the exercise, JTF instrumentation interfaces with exercise elements, data collection and distribution requirements, control of JT&E participants, transportation and logistics support, fiscal responsibilities, and the control/release of JT&E results. This level of coordination will require that the JTF enter these discussions with a complete and well thought out plan for accomplishing the JT&E activity.

Further, the JTD should be aware that past experience indicates that range and exercise managers will expect the JTF to provide something of benefit to the range or exercise in terms of cost sharing, instrumentation modifications or the provision of equipment, threats, and instrumentation capabilities that would not be available otherwise.

Test Methods and Test Cell Matrices

JTF coordination for the use of resources (facilities or exercises) to conduct the activities in the APA may identify the fact that some may not be available when needed or some may be too costly. If either is the case, the JTF should quickly consider alternatives and formalize the use of alternative test methods, facilities or resources (exercises). The JFS considered alternative test methods, in terms of cost versus risk, for accomplishing the JT&E in the event of reduced program funding levels. If JT&E restructuring is required, the JTF will find the JFS test methods matrix helpful in the consideration of alternative activities to replace those in the APA. If acceptable alternatives cannot be arranged, the JTF may have to consider modifications to the test cell matrix or re-scope the JT&E to something achievable with available facilities or resources. This rescoping should include reviews of the controlled variables (environments, systems, tasks, etc.) in the test cell matrix and may involve tradeoffs between facilities and support resources and the benefits to be gained from the JT&E. For example, a reduced JT&E may be able to resolve issues for only a limited set of circumstances. These limited circumstances may, however, be those that are critical or those that will occur most frequently. Major changes will be coordinated with DDT&E.

JT&E Schedule

The APA contains a schedule that identifies where and when the JT&E activities should be conducted. This schedule is based on preliminary coordination with the organizations responsible for the resources that the JTF intends to use. The JT&E schedule should be revised based on the results of formal agreements between the JTF and the managers of the required facilities or exercises. Annex G contains a list of service test range/facility documents and information relative to the formalization of use agreements. **Figure 3-3** is an example of a JT&E schedule that has been revised to accurately reflect *when* and *where* the activities and events will take place. The JT&E schedule will be used primarily as the timeline reference for planning those actions that must be accomplished to support the JT&E activities. Such actions may include training, equipment and instrumentation acquisitions and installations, the transport of personnel and materials, modification or acquisition of communications or data collection systems, and the provision of logistics to support the JT&E activities.

Test Measures

The JTF should carefully review each measure in the APA and develop detailed definitions of each, to include explanations of how each is calculated. These definitions should be tailored to the specific test activities in the revised program schedule.

Some of the measures in the APA may be very simple. Others may involve several computations using numerous data sources, such as determining the probability of kill for a simulated weapons release against a fixed facility target. This measure requires determining the location, velocity, and approach profile of the attack aircraft at the time of the simulated release; wind direction and speed; several weapon system parameters; projected impact point; the

SCHEDULE ACTIVITY	JFS 11 Months				JTF 3 Years												
	FY W				FY X				FY Y				FY Z			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Charter			●													
Establish/Organize JTF			—													
Planning			△		△											
Revise WBS/Schedule			—													
Program Test Plan			—													
Data Management Plan			—													
Test Activity Plans				—												
TEST ACTIVITIES					△								△			
Test Activity A					▓		▒									
Test Activity B									▨							
Test Activity C						▓				▒						
Data Reduction/Validation						- - - -				- - -						
Program Data Analysis									—							
REPORTING																
Report Shell/Draft						- - -			- - -							
Coordination												—				
Final Report													—			
Close Down															—	

▓ Studies/Models ▨ Simulation ■ Mini-Test □ Field Test

Figure 3-3. Example of a Revised JT&E Program Schedule

destructive capabilities of the weapon; and the size and construction of the target. These parameters then must be used in a model, such as JMEM, to calculate a level of damage to the target. All of these parameters result in data elements required to support the measure and must be included in the detailed definition of the measure and the description of how the measure will be calculated.

There may be additional data elements involved in the measure definition and description. For example, weather conditions could affect test operations and, in turn, the data collected. Other examples include such things as variations in tactics, terrain, or personnel experience levels that could provide variations or anomalies in the data collected.

Consolidated Resource Estimate (CRE)

The Army and Air Force have established formal processes to provide resources to support JT&Es. The Navy and Marines have established staff responsibilities to provide JT&E support on a case-by-case basis. Information on the Service processes and Service directives for requesting resources is contained in Chapter 4. These processes can take as much as a year for the Services to plan and provide the resources, but

request for Service resources cannot be initiated until after the JTF is chartered. *Request for Service resources should, therefore, be submitted as soon as possible after the JTF is chartered.*

The JFS, in coordination with the lead and participating Services, developed a CRE that would be required to execute the JT&E. The JFS Service deputies should have broken out their portion of this estimate in their Service request formats and these breakouts should be provided to the JTF at charter. The JTF should submit these breakouts to the Service OTAs for the initial establishment of JT&E resource requirements in Service channels. The JTF should then revise these resource requirements based on the results of the re-coordination of JT&E activities. If this re-coordination results in significant changes, the JTF should submit resource requirement revisions to the Service OTAs as they occur. The JTD should also establish the requirement to review and revalidate Service resource requirements at least annually. All changes in JT&E resource requirements should be coordinated with the Service OTA JT&E POCs as they occur.

F. DOCUMENT JTF PLANNING

The APA, as developed by the JFS and approved by DDT&E, focuses primarily on *what* the JTF should do to address the JT&E issues. JTF planning should focus on *how* to accomplish these activities and *how* the JT&E results are to be documented and reported. The JTF should document this detailed planning. The most common way to document JTF planning is to expand the level of detail in the APA into a PTP. Other options are discussed in the lead in to Part One of this Chapter. That portion of JTF planning that deals with *how* to collect, manage, and analyze the data collected during the JT&E activities should be documented in a Data Management and Analysis Plan (DMAP). The DMAP may be prepared as a stand-alone document or as an annex to a PTP. Together, they serve as the JT&E road map to assure that all test activities are focused on resolving the program issues.

A PTP serves several purposes. Externally, it will provide DDT&E, the CINCs, Joint Staff and the Services with a detailed understanding of the JT&E scope, schedule, milestones, support requirements, and how the JTF plans to resolve the program issues. Internally, a PTP will provide for the scheduling, coordination, and acquisition of facilities and resources to accomplish the JT&E activities. The PTP should specify *how* the activities will be conducted, *when* and *where* they will occur, *what* units will participate, the scenario, the method of accomplishment, key data requirements and collection techniques, the major resources required from the participating units, the composition of the test activity teams (during planning, execution, analysis, and reporting), and how the JT&E activities and events fit into answering the program issues.

The JTF will refine and expand on the planning actions initiated in the APA. The JTF should then incorporate this expanded planning into a PTP that will provide the overall framework for the development of specific plans for each of the JT&E activities. These specific plans should outline in detail *where, when,* and *how* each of the activities will be accomplished. Annex L contains an example of

an outline for a PTP that can be tailored to the requirements of the JT&E.

If the JT&E is large or complicated, other program-level plans might be required, such as security and safety plans. These plans can be incorporated as annexes to a PTP or developed as stand-alone documents. JTF planning should assure that each of the site specific test plans are focused on providing specific inputs to the program and *how* the aggregation of the test activity results will be used to answer the JT&E issues. It is not necessary to replicate information in the APA that is considered sufficient to satisfy program level requirements. The principal features of a PTP are:

- The finalized JT&E concept, issues, and objectives.
- Detailed definitions of the measures and data elements.
- Details of the scenario.
- A list of JT&E assumptions and constraints.
- The matrix that identifies the test method and vehicle for each JT&E activity.
- The test cell matrix that identifies the controlled variables for each JT&E event.
- An approach for resolving each of the issues and achieving each of the objectives.
- A schedule that identifies where and when each JT&E activity will be conducted.
- An estimate of resource requirements.
- JTF management considerations.
- JTF documentation and reporting requirements and procedures.
- A description of the products that the JTF will produce.

The APA addressed several other considerations in the determination of JT&E feasibility that should be reviewed during JT&E planning.

Environmental Considerations

Government regulations mandate that DoD activities comply with all legal statutes, such as the National Environment Policy Act (NEPA), to ensure the preservation of natural resources. JTF planning must consider environmental requirements in order to anticipate and avoid environmental impacts when possible. For assistance on environmental issues, the JTD should contact the Service/DESA JT&E POC. Annex I contains a discussion of environmental compliance requirements.

Security Considerations

JTF planning must consider security requirements in order to anticipate and avoid potential security compromise situations. These considerations should include all aspects of JT&E operations to include communications; the collection, recording, transportation, storage, reproduction, and destruction of classified data; the protection of classified documents and security requirements for discussions; and information releases, briefings, and JTF produced documents. JTF planning should address program-level security procedures and requirements.

Other Considerations

There are a number of other factors over which the JTF may have little or no control.
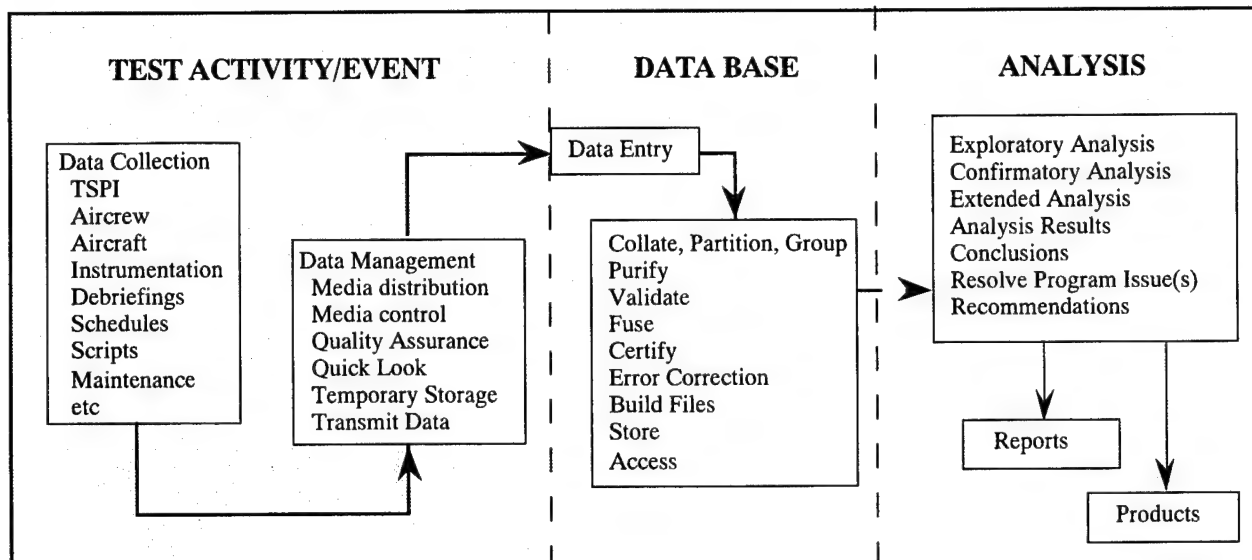
Figure 3-4.   Example of Data Management and Analysis Functions

Some of these variables may include changes in available funding, test support resources that are no longer available (equipment, instrumentation, facilities, ranges, personnel, units), and Service support (willingness to provide funding, personnel, and equipment). The JTF should remain sensitive to these variables and should be prepared to adjust the program as required to complete the JT&E on time. The JTD must keep DDT&E apprised of any changes in these factors.

G. DEVELOP THE JT&E DATA MANAGEMENT AND ANALYSIS PLAN (DMAP)

A JT&E DMAP is the companion document to a PTP that formalizes the portion of JTF planning that deals with *how* to collect, manage, and analyze data collected during the JT&E activities. As the name implies, the focus of the DMAP is on *data management* collection, reconstruction, verification, storage and retrieval; and *analysis* methods, tools, and outputs. **Figure 3-4** is an example of DMAP functions

discussed in this chapter. The scope and requirements for JT&E activities will be established during JTF planning. Regardless of the size, scope, or type of JT&E activities, there are many elements that will be common to all DMAPs. Annex L contains an example of a DMAP outline that can be tailored to meet the specific needs of the JTF.

As a general rule, the JT&E DMAP should be prepared as early as possible and should be coordinated with the JTF analysts and the activity test managers. This will ensure understanding of the data requirements, address required areas of coordination in the data management and analysis process, and identify possible difficulties and conflicts in obtaining and processing the test data. The DMAP will undergo additions and revisions as the test planning matures. A final version must be generated prior to execution of the scheduled JT&E activities as the specific data collection, management and analysis procedures for each will require some time to develop, coordinate, and implement.

The JT&E DMAP provides the framework that ties the overall data management and analysis process together at the program level. The JTF should anticipate that a similar but more detailed DMAP will be required to support the planning for each major JT&E activity. The elements common to most DMAPs will be the development of an analysis methodology, the identification and consolidation of data requirements and sources, and the development of data collection and management procedures. These elements can then be consolidated into the JT&E DMAP.

Analysis Methodology

The process for the development of an analysis methodology begins with a complete understanding and the clarification, if necessary, of the JT&E concepts, issues, objectives, measures, and data requirements. No amount of analysis can "fix" poorly defined measures or data that were not collected accurately. The derivation of measures and analysis techniques may not be simple, but the identification of analysis support requirements must be described in terms that are understandable and defensible. **Figure 3-5** contains examples of analysis support products that have been used during previous JT&Es to support analysis requirements.
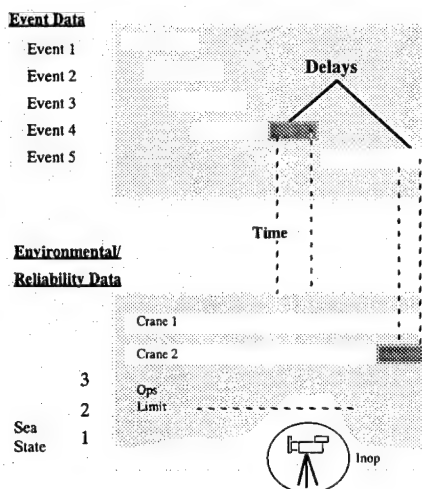
The analysis support products should be identified as early in the planning process as possible. Examples of these products can be used to illustrate and clarify the test objectives. When the analysis support products have been identified, the required data and data sources to produce these products should be evident. Tracing the analysis support products back to the

data requirements is an excellent way of ensuring that all data elements have been identified and that unnecessary data will not be collected. There will be a close correlation between the analysis support products generated during JT&E activities and the JTF final report. The early identification and coordination of analytical support products provides several advantages:

- Test issues and objectives are clarified early in the planning process.
- Program and test managers are involved in the design of analysis products.
- Traceability is established between the test issues, objectives, measures and data elements.
- Only necessary data are collected for analysis.
- Analysis support products are available to support test management and reporting requirements.

Analysis is frequently confused with "number crunching" and statistics, but these are really sub-activities to the overall analysis process. Program analysis involves expert judgment to determine the meaningfulness of observed effects in terms of operational impact, to assess the importance of trends that cannot be statistically verified, and to provide insights into **why** observed effects were (or were not) demonstrated. In addition, some issues may have to be answered on the basis of aggregating outcomes across several objectives or measures, and aggregation policies are frequently very difficult to codify. Some measures will be judged to be more important than others, and some measures will be less reliable. Patterns of results may suggest conclusions that are not supported by a singular finding. Contradictions
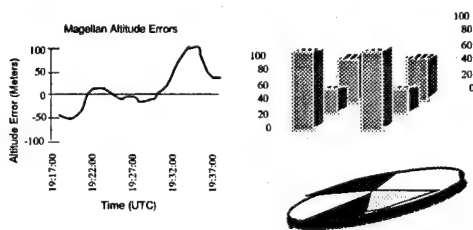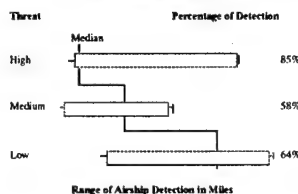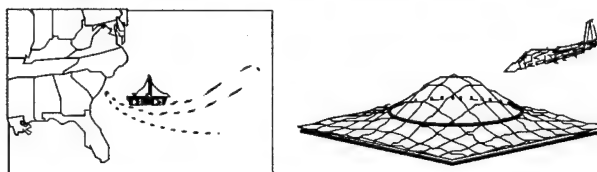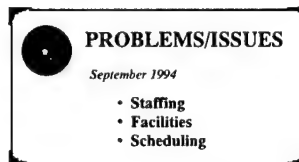
Figure 3-5. Examples of Analysis Support Products

and ambiguities in the data are inevitable. The analysis methodology must consider all of these factors and specify the analysis procedures in sufficient detail so that test execution becomes primarily a matter of following instructions.

The JFS Team developed an analysis methodology that includes both formal and informal analysis of the employed concept and system capabilities in terms of the mission it supports. The JTF will expand this methodology to finalize the analysis criteria that will be used. The JTF should anticipate failures and deficiencies in test articles and other test resources and specify alternative analysis procedures to be followed and criteria to be used under such circumstances prior to actual testing.

Analysis typically will be accomplished in three steps: exploratory, confirmatory, and extended.

Exploratory analysis refers to the methods and products by which analysts come to understand, characterize, and investigate the test data. The types of explorations performed are very much dependent on the type of data collected and the overall analysis approach, but

generally will include: determining the shapes and scaling assumptions of underlying distributions; examining measures of central tendency and dispersion; determining criteria and procedures for handling outliers and missing data; testing assumptions of normality, independence, and homogeneity of variance (if appropriate); examining univariate and multivariate correlations among test variables.

Common tools and products for these investigations include: simple descriptive statistics (e.g., percents, means, quartiles), frequency tables and summaries, graphs of distributions (e.g., histograms, cumulative frequency plots), box-and-whisker plots, stem-and-leaf plots, and scatter plots. Information on the application and use of these tools can be obtained from basic analysis instructions such as: *Applications, Basics, and Computing of Exploratory Data Analysis*, by Paul Velleman. Sometimes the most important tools are non-statistical, such as overlays of data points on maps or time plots, or examination of operational logs and communications to determine unexpected trends or relationships. The complexity and imagination required for doing good exploratory analysis sometimes causes it to seem more art than science. Nonetheless, its importance for good testing cannot be overstated. Every analyst knows horror stories of statistical methods blindly applied resulting in erroneous and even ludicrous conclusions.

Confirmatory analysis is the term generally applied to determining the statistical and operational significance and confidence levels associated with the predicted test outcomes. Where hypothesis testing is appropriate, this step will involve the application of statistical tests of differences in measures of central tendencies (e.g., means, medians), variances, or other distribution parameters. In other cases, analysis may involve simple comparison of success and failure rates or characterizing performance using engineering models or simulations. In some cases, human judgment will be a primary analysis method, based on expert opinion or surveys of operators. Again, this step is so dependent on test requirements that it is difficult to specify the full range of what may be entailed. The goal of confirmatory analysis is to translate test results into findings and conclusions that address or resolve the test issues.

Extended analysis refers to the evaluation processes that require information beyond the data collected during test. Anomalous or unexpected results may be contrary to the current understanding of the system or its interfaces with other systems. Results may be extended using modeling and simulation or other extrapolation methods. In most cases, this step will address specific aspects of cause and effect in system performance.

Data Requirements and Sources

JTF planning must identify the data that must be generated to meet the requirements identified in the analysis methodology and what is the best data source and collection method for obtaining the required data elements. The JTF should then develop a list of the required data elements that identifies the primary and secondary sources and media for obtaining the data *(what)*, establishes the criteria for collecting the data *(where, when, how)*, and identifies the responsible party for collecting the data *(who)*. These data requirements should be

consolidated into an Integrated Data Requirements List (IDRL) that is included as an annex to the DMAP. An example of an IDRL is provided in **Figure 3-6**.

There may be additional data elements required to support data verification and event reconstruction, to amplify and support the primary measures, or to provide redundancy in data should a primary data source fail. As a general rule, the data elements in the IDRL can be grouped into the following categories:

- **Data elements to support resolution of the measures** and produce the analysis support products.
- **Ancillary data elements** to collect data that will be used to explain variations or anomalies in the primary data elements. For example, weather conditions that could affect test operations.

- **Data elements that identify** the test conditions and are required to connect and track data. For example trial numbers, form numbers, or survey respondents identification.
- **Secondary data and data sources** that will be used if primary sources fail. Each trial in a test might cost the Government millions of dollars. The instrumentation for these trials is never fully functional nor reliable, thus requiring the use of back up instrumentation system. Capturing critical data elements in more than one way can preserve the analytical value of the test data.

Whenever possible, existing instrumented data sources should be used to minimize the cost and resources that will be required to accomplish the data collection effort. The JTF should identify and obtain detailed descriptions and total

Figure 3-6. Example of an IDRL

cost figures for each of the potential sources for obtaining the data elements. Cost considerations should include such things as required instrumentation installations or modifications, transportation, supplies, operations, and maintenance. The important thing is to consider all potential data sources and determine which best suit the JT&E requirements. **Figure 3-7** is an example of a data source matrix that should be included in the DMAP. If extensive instrumentation system descriptions or specialized procedures are required to collect the data, these should be included as an annex to the DMAP.

Data Collection Procedures and Schedule

Data collection procedures should describe *when, where, how, by whom, and in what format*t all data elements will be collected, as well as how the data will be transferred, archived, and controlled for entry into the program database. The procedures should also specify the required parameters for collecting the data, the criteria for determining the acceptability of the collected data, and a schedule for the data collection activities. Some of the JT&E activities will involve repetitive trials or events and others may involve test phases that are dependent on the completion of other test events. JTF planners should be flexible in designing the schedule to assure that it conforms to the dynamics of the JT&E activities or events and is in an appropriate format that best represents those dynamics.

Data Collectors

The DMAP should specify the number of people that will be required for the data collection effort, their requisite skills and training, where and when the people will be required, and the equipment and support they will need at each location. There will be varying degrees of human involvement in all data collection efforts.

MEDIA

Data Elements	Manual Forms	Video	Auto Instrument	TSPI	Survey
1.1		●	●		
1.2 1.2.1 1.2.2 1.2.3	● ● ●	.	●	● ●	
1.3 1.3.1 1.3.2	●	●	●	●	●
1.4	●			●	
1.n			●	●	

Figure 3-7. Example of a Data Source Matrix

Even fully automated instrumentation systems (e.g., TSPI, GPS) require personnel for setup and monitoring. There will frequently be forms to fill out relative to system performance or to provide background data for the trial. Other data collection systems, such as video cameras and tape recorders, may be used as a primary data collection device or as a backup to other systems. Some tests will require observer logs and expert opinion as primary data sources. JTF planning should also consider shift requirements and associated overlap times. Since neither people nor instruments are completely reliable, JTF planning should consider spares for both.

Data Processing Flow

The JTF should develop and include in the DMAP a data processing flow that provides for the orderly and controlled handling of data collected during each JT&E activity. The individual activity teams will collect data and conduct quality assurance and limited data reduction on site. When received at the JTF processing facility, the data will undergo *data entry* and will be further reduced in terms of data element extraction, data fusion, and data verification. If large quantities of data are required, the JTF should consider automated data entry screens wherein data elements are automatically routed to the correct fields and automated checks are made of data types to assure that the data are within specified bounds. *Data extraction* involves retrieving the data from numerous raw data sources and translating these data into acceptable formats. *Data fusion* merges the data of different types and various sources into a format and file structure that best accommodates the data verification and truth analysis process. *Data verification* involves

correlation and cross-checking the data for consistency and value acceptability. This data flow process is required to assure that no data are lost during processing and that each step can be repeated to address anomalies or uncertainties. **Figure 3-8** is an example of a data processing flow.

Data Tracking

Each data source will have an associated data medium (manual forms, file on a computer disk, audio or video tape, photograph, system data recording tapes, etc.). For each medium, the DMAP should include procedures that provide for the positive identification of each data element as it proceeds through the data management and analysis process. These procedures should address the requirement for serial numbers on repetitive forms, data identification that includes such things as the instrumentation sources and locations, date and time of data collection, and format. The use of computer printed or stick-on labels for serial numbering and laser scanning should be considered in the development of the data collection and management procedures.

Data Library

The DMAP should specify the procedures, personnel, equipment, and facilities that will be required for data library operations. Normally, a field data library will be required at each test activity site that will be responsible for the issue and control of data media, logging the distribution and receipt of the media, and delivering the original copies of the media to the JTF data management center. A data library at the JTF data management center will be responsible for the receipt, control, processing,
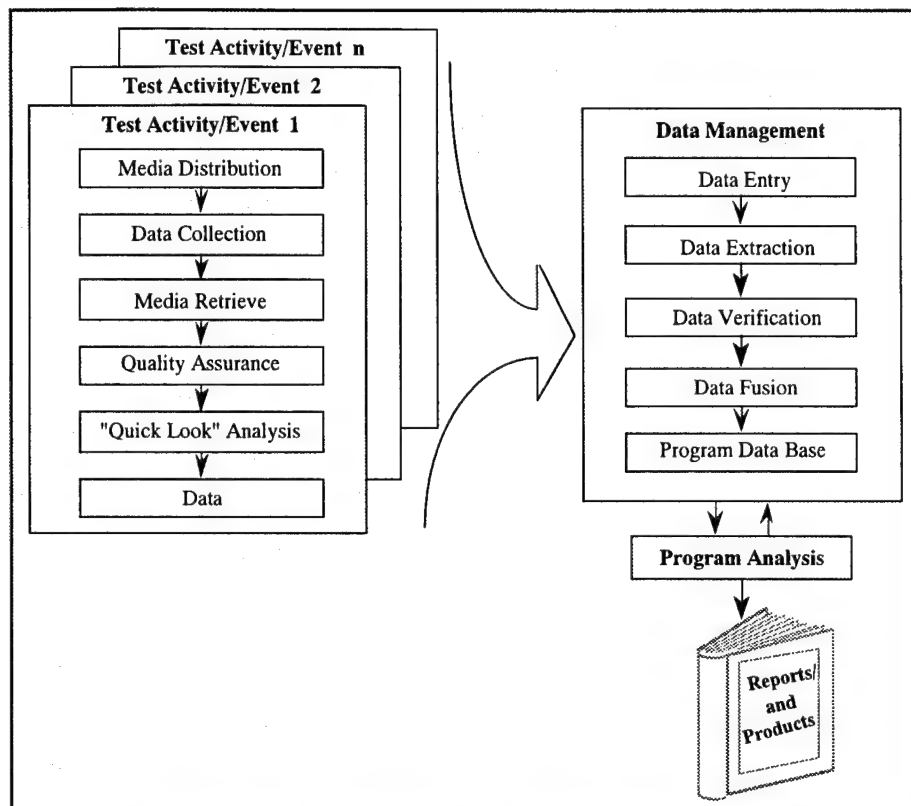
Figure 3-8. Example of a Data Process Flow

and storage of all test data in the JT&E database. **Figure 3-9** is a typical example of JT&E library functions. The roles and responsibilities for all JT&E library functions should be clearly defined.

Quality Assurance (QA)

The DMAP should include methods and procedures to assure that data collection for the various test activities meet the planned requirements and that the collected data are as accurate and complete as possible. These QA methods and procedures should be planned for implementation at all stages in the data collection and management process. Data media control procedures are an integral part of QA and should be implemented at several points in the process. For example, individuals should be assigned to check and monitor data recording as soon as

possible after data collection. If errors or deficiencies are discovered during the data collection process, it may be possible to correct the errors or re-accomplish the trial, whereas deficiencies that are discovered later in the process may result in unrecoverable data losses.

Specific QA techniques will depend on the data collection media. Manual data forms should be checked for completeness, legibility, and reasonableness of data magnitudes and sequences. Audio and video tapes should be sampled to assure that the recording equipment is functioning properly and that the required data fields are being recorded in the format and magnitude expected. Such factors as time constraints, personnel, and equipment requirements will determine whether these checks
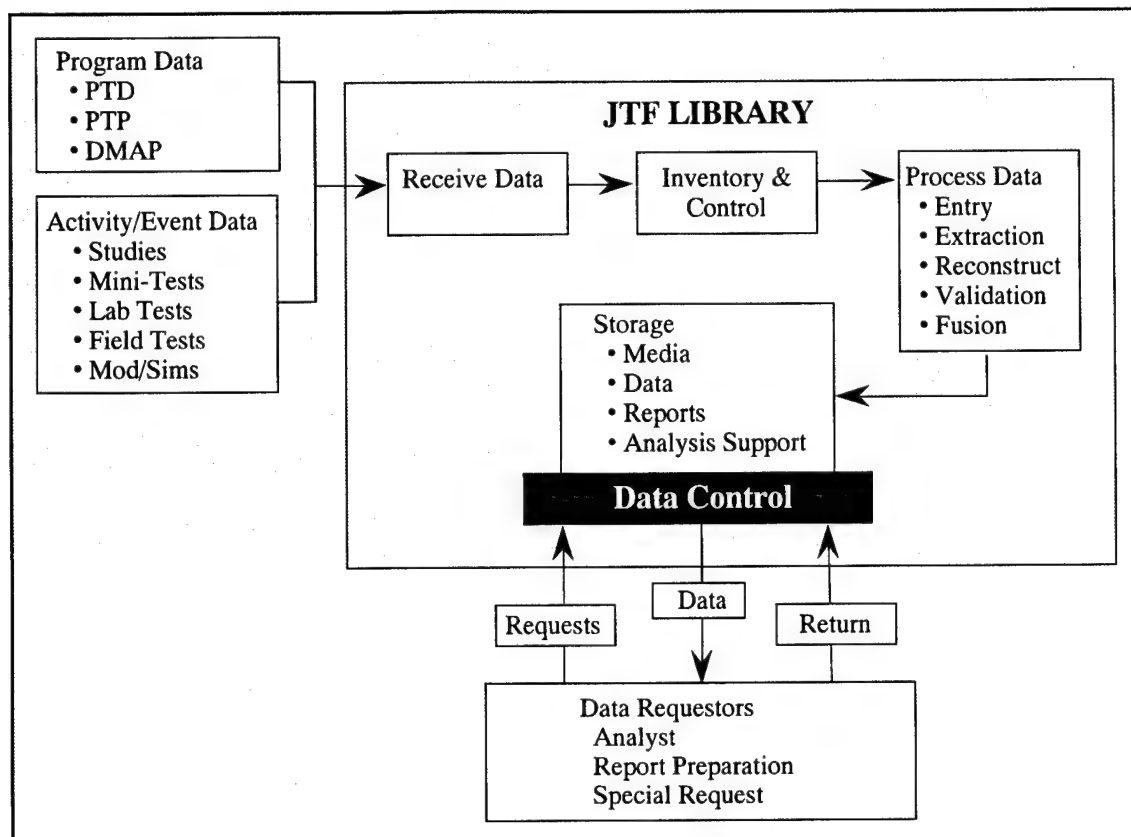
Figure 3-9. Example of JTF Library Functional Flow

are accomplished at the data collection site, the database entry station, or the JTF data library.

Perhaps the most important part of QA is to make sure that the entire data collection team clearly understands the importance of the data being collected. Each individual must accept responsibility for its accuracy. Training and practice for data collectors should be emphasized. Data collection procedures should ensure that problems are identified early and corrective actions are taken.

JT&E Database Design

The term database refers to the media and tools by which data are stored, retrieved, and analyzed for use by the test team. Typically, computer systems are the preferred media, although completely manual systems are possible. Different types of data may be stored in different databases or in portions of a single multimedia database. Data collected at geographically separated locations may be linked via a network or can be processed and merged at a single location.

For most JT&Es, an efficient and effective computerized database is crucial to the analysis process. An example of the steps in database development is presented as **Figure 3-10**. It will be beneficial for the JTD and appropriate JTF members to visit ongoing JT&Es and discuss the merits and deficiencies of the databases currently in use. This is likely to be the JTF's most current and reliable source of

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┌─────────────────────────────────────────────┐
│  ┌─────────────────────────────────────────┐ │
│  │     ANALYSIS OF DATA NEED/SOURCES       │ │
│  ├─────────────────────────────────────────┤ │
│  │  • Uses         • Access/Manipulation   │ │
│  │  • Measures     • Interface with other  │ │
│  │  • Sources        data-base systems     │ │
│  │  • Types        • Security Requirements │ │
│  │  • Availability • Remote sites          │ │
│  │  • Language                             │ │
│  └─────────────────────────────────────────┘ │
│                     ↓                         │
│  ┌─────────────────────────────────────────┐ │
│  │          DEFINE REQUIREMENTS            │ │
│  ├─────────────────────────────────────────┤ │
│  │  • Tempest      • User Requirements     │ │
│  │  • Architecture • Input/Output data     │ │
│  │  • Procedures   • Interface             │ │
│  └─────────────────────────────────────────┘ │
│                     ↓                         │
│  ┌─────────────────────────────────────────┐ │
│  │       EVALUATE EXISTING SYSTEMS         │ │
│  └─────────────────────────────────────────┘ │
│                     ↓                         │
│  ┌─────────────────────────────────────────┐ │
│  │           DATABASE DESIGN               │ │
│  ├─────────────────────────────────────────┤ │
│  │  • Documentation • Data Storage         │ │
│  │  • CM Plan       • Operating Specs      │ │
│  │  • Modules       • Analytical Programs  │ │
│  │  • Formats       • Dictionary           │ │
│  └─────────────────────────────────────────┘ │
│                     ↓                         │
│  ┌─────────────────────────────────────────┐ │
│  │               DEVELOP                   │ │
│  ├─────────────────────────────────────────┤ │
│  │  • Program     • Hardware               │ │
│  │  • Financial   • Software               │ │
│  │  • Documents   • Data Screening         │ │
│  │  • Maintenance • Historical             │ │
│  └─────────────────────────────────────────┘ │
│                     ↓                         │
│  ┌─────────────────────────────────────────┐ │
│  │        IMPLEMENT PROGRAMMING            │ │
│  └─────────────────────────────────────────┘ │
│                     ↓                         │
│  ┌─────────────────────────────────────────┐ │
│  │              VALIDATION                 │ │
│  └─────────────────────────────────────────┘ │
│                     ↓                         │
│  ┌─────────────────────────────────────────┐ │
│  │     INTEGRATE WITH TRACKING SYSTEM      │ │
│  └─────────────────────────────────────────┘ │
└─────────────────────────────────────────────┘
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Figure 3-10. Example of Steps in Data Base Development

information as to what is required, what works well, and what does not work.

Hardware requirements are determined by a host of factors such as storage requirements, CPU requirements, data turn-around times, number of users, geographic separation, security, and file sharing. **Figure 3-11** is an example of a JTF hardware connectivity diagram. Hardware can be costly and may take some time to acquire. The JTF should, therefore, determine these requirements early in the program and initiate actions to fund and acquire the equipment. The Services and DESA maintain some database equipment that was purchased and used by previous tests and JT&Es. The JTF should check with the Service and the DESA JT&E POC to determine if any of this hardware could be used to satisfy requirements and what purchases might be needed to take advantage of the latest technology.

Software needs for most JT&Es will be met with a commercially available database management system (DBMS). The database will be used to provide reduced, processed, and analysis-ready data that is capable of supporting the analysis process and developing the analysis support products. If audio or visual data are integral to the analysis, then a DBMS with multimedia capabilities should be used. The JTF should conduct a software requirements review to identify the specific features needed in the database and analysis software. Depending on the analysis methodology, there may be a requirement for separate statistical and graphics packages. The need for utility software to generate forms and reports should also be considered. While the software requirements will primarily be based on what is needed to do the job, the JTF should also consider the cost of the software programs, their ability to interface with other Service and OSD databases and the availability of existing software.
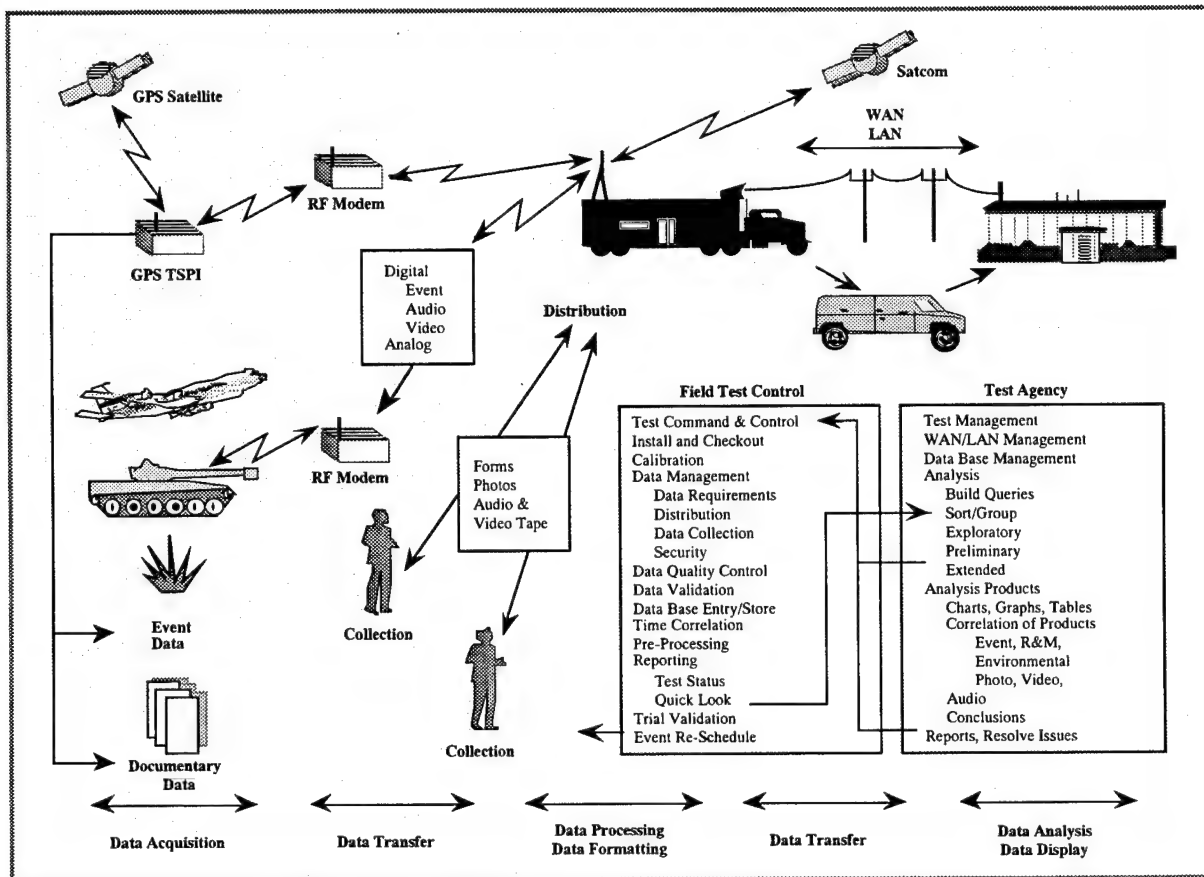
Figure 3-11. **Example of JTF Hardware Connectivity**

The Services and DESA maintain database and analysis software programs that were purchased and used in previous tests and JT&Es. The JTF should check with the Service and DESA JT&E POC to determine if this software is applicable. If not, readily available commercial off-the-shelf software should be considered. Many of these packages are readily available and are easy to learn and use. The use of off-the-shelf software may require that some modifications to the software or some unique modules or queries be developed. For JT&Es that involve relatively small amounts of numerical data, the use of a spreadsheet package may be all that is needed.

Training

The DMAP should also outline the types of training, the personnel to be trained, and an overall schedule for training the data management and analysis personnel. Detailed lesson plans, instructional media and equipment, and logistics considerations should be examined and, if required, included in the JT&E DMAP and the specific test activity DMAPs. The amount and type of training will vary among the test. Some training could be in the form of planned procedures, demonstrations of instrumentation, quick-look analysis of notional data, or formal training sessions. If the training requirements are

very large, the JTF may want to consider the development of a training plan that could be an annex to the PTP or the DMAP.

H. DEVELOP A TEST PLAN FOR EACH JT&E ACTIVITY

While a quality plan does not guarantee successful execution of a test activity, poor or incomplete test plans assure that the test team will encounter many problems that will impact on the quality of the data collected. The key to producing a good test plan is detailed planning to assure that the data are collected under realistic operational conditions, all required data elements are collected, the collected data are accurate and complete, and data collection and management does not corrupt the data. The detailed planning should also identify and provide for the acquisition of adequate instrumentation and test support resources, the training of all participants, sufficient pretest runs of instrumentation and data collection procedures, responsive quick-look analysis of the data, and the flexibility to adjust to unforeseen circumstances or changing situations.

The JTD should assign a test manager (TM) who is responsible for the planning and execution of each test activity. The TM should form a test team to assist him or her in the detailed planning of the test activity. Normally, the test team will be composed of personnel that are matrixed from the JTF divisions. The test team should then be augmented as required from JTF or surge resources for execution of the test activity. The following are some of the elements that should be considered in the development of specific test activity plans.

Understand the APA

Each test activity is a part of the JT&E program. The test activity plan is an extension of the APA that provides the details of *how* the test activity will be conducted. The TM and his test planning team must fully understand how their test activity relates to the JT&E and should consult with the program analysts so that new or revised requirements are considered and included.

Define the Scenario

Scenarios define the context within which the required data will be collected. In most cases, field test activities should be planned to collect data under operationally realistic conditions. A scenario should be defined for each test activity that is representative of the APA scenario but is tailored to the specific requirements of the test activity. The scenario should include geographic locations, descriptions and laydowns of friendly and hostile forces, and a description of all planned operations and objectives across a general time frame. The complexity and extent of the scenario may be reduced if some of the operational elements do not affect the data to be collected. Definition of the scenario should be coordinated with the supporting Services as the test activity results will be judged to a degree by the credibility of the scenario.

Verify and Coordinate Resource Requirements

Resource requirements (units, personnel, and equipment) were developed for each of the

test activities during development of the APA and were submitted to the Service OTAs for inclusion in their resource management planning. The test activity planning teams should review these resource requirements to verify that all required resources have been included. If not, the JTF resource requirement submissions to the Service OTAs must be revised accordingly. The test activity planning teams must then coordinate directly with the organizations that will provide the resources and develop MOAs or PIDs to assure that the required resources will be available.

Define Instrumentation Requirements

Instrumentation requirements should be addressed early in the planning process. Schedules and budgets can be affected by the time and cost required to procure the required instrumentation systems and modify or integrate them with existing systems. The analyst and engineers on the TM's planning team should review the requirements for each data element and determine how the data can best be captured and recorded.

Most of the Service test centers have instrumentation and data processing facilities specifically designed for operational testing. Training ranges usually have less instrumentation. DESA is a possible source of information on test ranges and maintains an inventory of select, transportable instrumentation that may be available to support specific test activity requirements. Acquiring unique instrumentation is the responsibility of the JTD. If required, the JTF must identify where the unique instrumentation can be obtained (borrowed, purchased, or leased), determine its

cost, budget for it, and arrange for its acquisition. Often, modifying an existing instrumentation system at the host range or facility is a more attractive option in terms of cost and lead-time. Concurrences from the facility manager and system custodian will be required. This concurrence is more likely if the modification will enhance or extend the range or facility system's capabilities.

Define Communication Requirements

Test activity planning should include considerations for communications to support such functions as command and control, data management, security, and safety. All operating procedures and data collection and transfer processes should be monitored so that deficiencies can be quickly brought to the attention of the test activity monitors. Each test platform and test site may require a communications capability for safety considerations. Test control may also require communication nets. Depending on the complexity and physical separation of the communications nodes, large numbers of nets, or even repeater stations, may be required. Some of the requirements may involve secure nets.

Define Logistics Requirements

Logistics support will primarily consist of planning and arranging for services and facilities to support the test activity at the facility or range. The required support will vary depending on the size and complexity of the test activity. Regardless, careful attention to logistics will avoid costly delays in test execution due to late arrival of resources. It is usually beneficial to separate logistics support requirements into two

categories; material support and services support. Each should be included as an annex to the test activity plan.

Material support includes the requirement for supplies, supply accounts, and special procedures for acquiring non-standard items that the supporting installation will be responsible for procuring, stocking, or handling to support the test activity. Requirements for petroleum, oils and lubricants, gases, and chemicals must be considered as well as requirements for the storage and handling of hazardous materials. POCs and locations for these services must also be determined. If applicable, requirements for the storage, handling, and delivery of munitions; armament maintenance; and explosive ordnance disposal must be considered. A source of miscellaneous supplies should be located.

Service support includes field maintenance, equipment packaging, equipment transportation, set-up, calibration and repair of test and instrumentation equipment, organizational maintenance, shop services, billeting, identification badges, food services, personnel transportation, postal services, telephone lines, medical support, recreation services, aircraft control, weather support, range or facility security, range or facility access procedures, and public relations. Requirements for administrative and technical support should be specified and arranged for. Any special security measures or courier service that will be required should be specified and arranged for.

Define Manpower Requirements

When test activity planning has defined the data to be collected, the data collection points and the instrumentation that will be required to collect the data, the manpower requirements to accomplish these tasks can be defined. Typically many sources of manpower could be used to satisfy these requirements. The most available source is the JTF itself. Large test activities or events may require that the test planners consider other resources to satisfy some of these requirements. Requirements for support from the Services should be included in the JTF resource requirement request submitted to the OTAs. Support contractors are another source of personnel that can be considered to satisfy surge requirements.

Develop Detailed Test Activity Procedures

The planners must develop detailed procedures to ensure that each test activity is conducted in a way that allows for the timely and accurate collection of all data elements in the test activity DMAP. These procedures should be in sufficient detail that they answer any question a test operator, data collector, test controller, or support person might have about the conduct of the test or the data collection effort. The procedures section will normally be the largest portion of a test activity plan. The test activity planners should consider the following in the development of these procedures:

- The planners should develop a **test schedule** that defines all facets of the test activity on a daily, or even hourly basis. All participants must know when they have to be on site, when they have to be operational, and how long they must be operational.
- The operational procedures for the test activity should be **operationally realistic** and representative of Service tactics, techniques and procedures (TTP). Equipment laydowns, test profiles and flight paths must be provided to ensure that all units and equipment are correctly located and that the equipment modes and power settings are correct.
- Planning should include **detailed timing considerations** for all units and equipment. The credibility of some of the collected data will be dependent on the relationship of the test participants and equipment in terms of their locations and distances from each other at specific times.
- Data collectors and test instrumentation operators must know when to **initiate and terminate data collection**. Few test activities will require the continuous and uninterrupted collection of data, as this would result in the requirement to manage large quantities of excess data. The procedures for each test activity must ensure that all required data are collected at prescribed times and in the appropriate format.
- For some test activities, the planners should consider **scripting** participant actions and responses.
- Unless the test activity is "piggybacking" on another test or exercise, the procedures must include **command and control** of the JT&E test activity. The nature and method of communicating these command and control

procedures to the participants should be clearly established and defined. Brevity without ambiguity is critical in the development of command and control procedures.
- Test activity planning should include the requirement to **brief all participants** on their specific roles before each test event. Some of the test participants will not have been involved in the planning process and may not fully understand their role or what each test activity should accomplish. All participants should also be debriefed after each test event to determine those aspects of the test event that went well, those that did not, and how the procedures could be improved. These briefings and debriefings should be carefully planned to maximize their benefits and minimize the time required for their conduct.

I. DEVELOP A DMAP FOR EACH TEST ACTIVITY

Test activity planning should develop complete, detailed, and integrated procedures for collecting, identifying, storing, and managing the data that will be collected during each test activity. Unless a test activity is very simple, the planners should develop a DMAP for each activity. The DMAP should specify the procedures that will be used to assure that the collected data will be treated carefully and responsibly at every stage of the collection and handling process. These procedures should also address the transport, storage, and security of all recording media. When possible, backup copies of the media should be made. All data should be labeled, indexed, and cataloged; procedures should be developed to control and maintain

accountability of the data. The following considerations should be addressed in the development of test activity DMAPs:

- Define the **data elements** to be collected and specify when and how they will be collected, the recording media and format, and the criteria for collecting and accepting the data.
- Specify the **instrumentation** required for collecting the data.
- Specify all **forms** required for collecting the data, how the forms will be obtained, and who is responsible for their development.
- Specify near-real-time data collection requirements and the related **data transfer** methods.
- Specify the procedures for collecting, labeling, and distributing the **data media**.
- Define **responsibilities** for all actions in the data collection and management process.
- Define the requirements for **training** of the data collectors and managers.
- Estimate the quantity and types of data to be collected and determine the **recording media requirements**.
- Specify the **details for data management**. These requirements will include personnel, equipment, and facilities.
- Specify the procedures for **data quality assurance** and specify where in the data management process these procedures will be implemented.
- Define the procedures for **quick-look** analysis to ascertain that the collected data are complete and accurate, to document compliance with the test plan, and to identify data collection and management deficiencies so that they can be corrected.

- Define the procedures for safeguarding **classified** media and data.
- Define the procedures for **disposition** of all data.

If any portion of the data collection and management system is to be automated, test activity planning should include considerations for software development. The use of milestone reviews should be considered throughout software development efforts to manage and correct slips that might occur. These following considerations relative to software development should be included in the DMAP:

- Problem definition.
- Detailed software specifications.
- The length of the design or acquisition period.
- Timing of the implementation phase.
- Software test integration requirements.
- Acceptance criteria.

J. ADDITIONAL FACTORS TO BE CONSIDERED

Coordination of Resources

All organizations and agencies scheduled to provide resources or services to the test activity should be contacted to determine the specifics of the support they will provide and to verify that the resources and services will be available when required. This coordination should be formalized and documented to include such details as who is responsible for transporting the resources and who is responsible for providing logistics support for the resources.

Scheduling

The scheduling of test activities is closely tied to the coordination process. The larger a test activity, the more complex the scheduling process will become as one participant's resource availability may conflict with those of another participant. Range or test facility availabilities may also present narrow windows for activity accomplishment and flexibility should be built into schedules to accommodate the impact of weather or equipment problems. The following are some considerations that planners should address in the development of workable schedules:

- Determine which of the assets are most critical and which are the must difficult to obtain. Consider these assets first in development of the schedule.
- Determine if there is any flexibility in the composition of test events and determine the minimum number of iterations required for each event. Schedule the least flexible events first.
- Determine a test event order and schedule the most critical first.
- Assure that resources and procedures are available and ready for the start of each event.
- Consider the requirement for makeup trials.

Feedback to the Program

The data being collected from the individual test activities will be used to calculate measures and the measures will in turn be used to resolve program-level issues. Program-level analysts should be aware of what is being planned for theindividual activities and planners should provide continual feedback to the program-level analysis team. The program-level analyst and test activity planners should remain cognizant of the overall program status and be prepared to refine or expand test activities to obtain incomplete or missing data from previous test activities.

Operational Realism

Test planners will inevitably face the concern of maintaining operational realism in the test activity planning process. *Data collection, instrumentation, range, and safety constraints frequently infringe on operational realism.* Test planners must consult with operational personnel to verify that the deployment and employment of systems closely replicates Service TTPs and develop procedures to ensure that the impact of data collection requirements on realism is kept to a minimum.

Environmental Protection

Environmental protection considerations are of increasing importance to test planning, even those that will be conducted on government ranges and federal or state lands. Test planning should consider potential environmental impacts and develop procedures to minimize, mitigate, or neutralize any adverse environmental effects. These considerations may require environmental assessments, instrumentation to monitor potential pollution effects, or discontinuation or re-definition of the test activity. Annex I contains more detailed information on environmental compliance.

Safety

The test activity plan should designate a safety officer, outline his or her responsibilities, identify critical safety aspects of the test activity, specify safety procedures to be followed, and establish a plan for emergencies. The safety procedures in the activity plan should be coordinated with the safety officer at the range or facility where the test activity will be conducted. If at any time an unsafe condition is found, cognizant personnel should report the condition and operations should cease until the safety hazard is corrected or eliminated. If the test activity involves ground maneuver of forces or flying operations, a safety annex should be developed that addresses such areas as:

- Overall and specific safety responsibilities and requirements for equipment operations.
- Overall and specific responsibilities for flight operations.
- Responsibilities and procedures for ordnance handling, delivery, and disposal.
- Test activity shutdown criteria and the procedures for shutdown execution when conditions warrant.
- On-site medical support and medical evacuation procedures.
- Interfaces with other related safety programs and procedures.

Security

Test activity planning should consider all aspects of security to include procedures for the storage and handling of classified materials, restricted area access, TEMPEST, operations security, and communications security. The planners should consult the security portion of the APA and ensure that all program-level security requirements are satisfied in the test activity plan. The planners should also consider any unique aspects of the test activity and develop security plans and procedures accordingly.

Frequency Coordination

If the test activity will involve the use of special frequencies, the planners should identify such requirements early and initiate frequency use authorizations with the local Federal Communication Commission (FCC) representatives at least six months before they are required. Frequency deconfliction procedures must be established and if jamming is involved, procedures should be established to responsively terminate the jamming. Frequency deconfliction procedures can be worked through the lead service frequency deconfliction manager.

Equipment Calibration

Test activity plans should specify that all instrumentation and equipment in the test activity be calibrated as often as the equipment specifications require. The test activity plans should also identify who is responsible for the calibrations and where they will be accomplished.

Site Surveys

Often the exact position in time and space of participating units and equipment in a test activity must be precisely determined. Test activity planning should determine how these requirements will be satisfied. For land positions, this may involve simply obtaining

existing survey data or surveying the intended locations. For air or sea positions, flight paths or vehicle routes must be accurately recorded using location instruments such as LORAN, TSPI radar, or Global Positioning Satellite (GPS) systems. Geographical terrain data may be required for line-of-sight, equipment orientations, or relative geometry considerations. Alternate locations should be considered for all equipment in the event a particular location becomes unavailable prior to or during a trial.

Go/No-go Criteria

No test activity will happen as planned. When a problem or deviation occurs, it is important that the TM quickly make an assessment to determine the utility of continuing that specific event. The planners should develop criteria that will aid in the decision to postpone or cancel an event. Go/no-go criteria are normally developed in a table format that allows the manager to quickly determine if a particular condition will adversely affect the activity. For complex events, the criteria may address multiple levels that allow for continuation of the event in a degraded mode.

Pretest Predictions

The test activity planners should conduct a pretest analysis to evaluate the benefits of possible test configurations, dry run test data collection systems, and determine the optimal relative positions of equipment and instrumentation. Techniques to support this requirement can range from simple models to predict workloads (to size data collection teams) to simulations of event timing, tactics, flight paths, and attack profiles to ensure operational

realism. Although abstractions of the complex situations they represent, models are of their greatest utility when used to support sensitivity analysis of a system to predict changes that will occur when parameters in the model are changed. Pretest predictions will also provide the test manager with a window of expected results that can be used to determine how the test activity is progressing.

Rehearsals

Complex tests can yield invalid conclusions if the participants do not follow the prescribed procedures, the data collectors do not thoroughly understand what they are supposed to record, or equipment malfunctions. Test activity planners should consider the requirement for rehearsals to maximize the probability that the test event will be successful. Rehearsals should be planned to check all parameters of the test and exercise the instrumentation, the data collection and management process, and the operational and safety procedures. Pretest data can be collected, reduced, and analyzed using established procedures, tools, and techniques. These rehearsals should be conducted sufficiently in advance of the test activity so that corrections or revisions to the test procedures can be accommodated.

PART TWO
JT&E EXECUTION

JT&E activity planning should have defined all of the functions necessary to safely and effectively conduct the test activities. Execution should be a matter of *doing it*. This part of Chapter 3 addresses the roles and responsibilities

of the test manager and discusses those actions that will be associated with pretest (setting up the test, range coordination, equipment preparation, personnel), test control, data management, and posttest requirements.

K. TEST MANAGER

The TM is responsible for the safe and effective execution of the test activity. He or she must have a complete understanding of the concept of structured testing, the forces, systems and equipment in the tests, and the operation of the range or test facility where the testing will be conducted. The TM will be the primary coordinator between the JTF, the test participants, the instrumentation and systems operators, and the range or test facility. It will be his or her responsibility to control the test to assure that the procedures in the test plan and DMAP are followed and that realistic and accurate data are collected. Conversely, the TM must be prepared to address unforeseen circumstances and make adjustments in test activities or procedures as may be required to assure that the test activity is conducted safely and that the data collected will satisfy JT&E program requirements.

The TM need not be a technical expert on every aspect of the test but must assure that technical expertise is available to him or her to fill that role. The primary skill requirements for a TM during test activity execution are the ability to coordinate and get various groups to work together, the ability to quickly evaluate situations, and the ability to quickly make decisions. TM responsibilities during test activity execution will require his or her total and undivided attention during all phases of the test execution.

L. PRETEST

Pretest preparations actually begin during the planning phase for the test. After the test plan has been approved by the JTD, the TM should develop a schedule for those actions that must be completed prior to test execution. Pretest preparations should include final range or facility use coordination, those actions required to assure that the participants and equipment are in place, and completion of the required training. The time between test plan approval and test execution should be used to review all aspects of the test (equipment, instrumentation, procedures, data collection and management, quick-look analysis, and administration) and implement corrective actions as required. The many aspects of pretest preparations are discussed next.

The TM is responsible for control of all phases of the test to include pretest, test, and posttest. Most of the personnel, equipment, and facilities will be provided by other organizations or agencies. During the pretest phase, the TM must conduct continual coordination with these organizations and agencies to assure that all personnel and equipment arrive on time and in a workable condition and that all required training is accomplished.

Final Range or Facility Coordination

JTF planning for the development of the test plan involves coordination with the requisite managers relative to the availability, control, support, schedule, and procedures for use of their range or test facility. This coordination should be continued to finalize the details for use of the range or test facility. The TM should emphasize the requirement for personal two-way

communication between the test team and the range or facility personnel.

Equipment Preparation

A key factor in a successful test is that all participants and equipment are in place, all are located in accordance with the test plan, and all equipment is operating within the prescribed parameters. The pretest schedule should include provisions for all participants, equipment, and instrumentation to be on-site at the range or test facility sufficiently in advance to allow for equipment and instrumentation settings or installation and rehearsals. Equipment that does not operate within the prescribed parameters should be adjusted or replaced. Backup equipment should also be run and calibrated.

Personnel

Execution of most test activities will involve a larger group of personnel than those involved in the test planning. All participants must have a full understanding of their duties and responsibilities. They should also understand the importance of their actions relative to the test activity and the JT&E. The pretest schedule should include provisions for a thorough orientation for all personnel that includes the *where, what*, and *why* of the test activity. If the test activity is conducted in conjunction with another test or exercise, the relationship of the two should be covered. Hands-on demonstrations of the systems that will be used is helpful in explaining system operations, capabilities, and limitations. A full explanation of control procedures, joint interoperability issues, communications, and safety considerations should also be covered. Finally, a complete explanation of the data collection, management, and analysis process is required for those involved in data collection and management. Although not all of the participants will be responsible for each of the functional areas, a common understanding of the test activity will aid in the development of teamwork.

Once the orientation is complete, training and rehearsals on individual systems or pieces of equipment should be considered. Rehearsals should be planned to accomplish the following four goals:

- Familiarize the participants with the most likely sequence of events (or the script if one is to be used) and how the test should proceed.
- Explore the impacts and consequences of alternative actions that will prepare the participants for making informed decisions during the test.
- Detect planning errors or misunderstandings relative to how the test is to proceed and how the test forms are to be used.
- Develop coordination among the test elements and staff.

The TM should consider the use of scripts in the conduct of some of this training. Scripts will assure that the training is consistent and covers all the points that should be conveyed to the participants. Scripts may be used to explore a direction that a test could take, for example, system failures or deviations from prescribed procedures. Training for data collection and

management personnel should consider the use of data that is representative of realistic types and quantities expected during the test. The data distribution and transfer process should also be exercised. The extent of the rehearsals should be driven by the complexity of the systems to be used and the competence of the participants.

M. TEST EXECUTION

Adequate test planning and pretest preparations should result in test execution being a matter of doing it. This is seldom the case however, and the TM must be prepared to monitor and control all aspects of the test. Daily debriefs will help in improving the success of subsequent test activities and the identification of alternative tactics and techniques.

Test Control

During the test execution phase, the TM will determine when all factors are satisfactory for initiation of a test event (system failures, instrumentation, weather, safety, security, environmental impacts, etc.). The TM will exercise control of all aspects of the test activity and will terminate testing when necessary. The TM will monitor and assess the progress of the test relative to problems and the collection of data and should be prepared to modify or substitute test events to meet the overall schedule. The control staff in the test operations center should be able to display what is happening to the TM in near-real-time. Constant attention to the status of communications systems and control procedures is essential when assessing the test situation and responding to the dynamics of the test.

Data Collection and Management

The TM is responsible for ensuring that the data collection and processing activities are carried out in accordance with the procedures in the DMAP. Data collection and reduction rehearsals should be considered to reduce the time required for data reduction and analysis. The data management advisor to the TM must track the flow of the test to ensure that deviations from the test plan do not adversely impact on the data collection, management, and analysis process. For example, if statistical analysis is planned, and changes result in insufficient numbers of samples, the TM must initiate corrective actions such as modifying or extending subsequent tests. The data management advisor to the TM is responsible for quick-look analysis and related reports. Quick-look is particularly important during multi-day tests, where the report can contribute to decisions to change or revise subsequent days' testing. The TM is responsible for assuring that the data validation and quality assurance processes are properly performed and that security procedures are strictly followed. The responsibility for lost or corrupted data ultimately falls to the TM.

Safety

The TM is responsible for the safe execution of the test activity. The TM will be assisted in this responsibility by a safety officer who is responsible for interfacing with the host range or facility safety officers on all safety matters. The safety officer will continually monitor all aspects of the test to identify, report, and correct safety deficiencies.

Security

The TM is responsible for safeguarding all classified equipment and all classified data and data media used or produced during the test. The TM will be assisted in this responsibility by a security officer who will be responsible for interfacing with the host range or facility security officers on all security matters. The test security officer will continually monitor all aspects of the test to identify, report, and correct security deficiencies.

N. POSTTEST

During posttest, the TM is responsible to see that all participants and equipment are safely returned to their parent units and that the condition of the equipment is comparable to the received condition. The TM is responsible for the accountability and return of all range or facility equipment assigned to or used during the test and the close out of all support arrangements and agreements.

PART THREE
REVIEWS, BRIEFINGS & REPORTS

The JTD is responsible for conducting reviews and producing briefings and reports that will keep DDT&E, Joint Staff, and the participating Services apprised of the JT&E status and problems that might impact on the program. The previously discussed **Figure 3-2** contains recommended formal program and technical reviews at key milestones in the program. The JTD should consider other reviews with agencies and individuals in the JT&E process to stimulate ideas that can improve

the program, establish contacts with resource providers, and generate support for implementation of the JTF products and recommendations. **Figure 3-12** outlines the basic requirement for JTF reports and their suspense.

O. PROGRESS REVIEWS

The primary recipient of JTF progress reviews will be DDT&E and *the JTD should establish a schedule to provide quarterly progress briefings to him/her.* These briefings will review the financial and general status of the JTF and present topics of current interest such as milestones, current issues, status of document preparation, and the results of coordination. In addition, a detailed financial profile, including commitments, expenditure, remaining balance, and spending plans should be provided. It is very important to keep the Services informed and to address their concerns through proactive, routine program reviews. Other agencies may be included in periodic but less frequent reviews.

In preparing for these reviews, the JTD should develop modular briefings using a standard format. Contributors to the review presentations should update the data in their respective sections at specific times each month. The presentations should also be used for internal status reviews and updates to other agencies as the need arises. The primary thrust of these presentations, however, is to support the DDT&E quarterly reviews; and inputs to the presentations should be timed and formatted to be compatible with that requirement. The following basic elements are required in the progress reviews.

DOCUMENT OR REPORT	PRIMARY RESPONSIBILITY	SUSPENSE	DESCRIPTION
Progress Reports	JTF Chief of Staff	Due to DDT&E as required.	Provides periodic updates of JTF activities.
Financial Reports	Resource Manager	Due to DDT&E as required.	Reports the JTF financial status.
Program Test Plan	JTD	As established by JTD.	Provides roadmap for all JTF activities.
Data Management and Analysis Plan	Data Manager	As established by JTD.	Orchestrates and guides data management efforts.
Detailed Test Plans	Test Managers	As established by JTD.	Provides detailed direction on test procedures for conducting activity.
Activity Reports	Test Managers	As established by JTD.	Documents results of test activity.
Special Reports	JTD	As required. NLT 45 days after external requests if information is available.	Reports on problems that require immediate attention.
Final Report	JTD	Due to DDT&E 120 days after completion of all test activities.	Final assessment of program issue(s).
Management Report	JTD	Due to DDT&E 30 days after presentation of final report.	Provides JTD conclusions, recommendations, and lessons learned.

Figure 3-12. JTF Reports

Joint Test and Evaluation Progress

This area of the review includes milestone completions, projections, slippage in the JT&E, problems, challenges, and risks. Items of particular importance are completed and projected activities, decision points, and interfaces with other agencies. The identification of long lead preparations and projected procurement requirements should also be included.

Budget

A graphic depiction of the status of institutional monies that displays the committed, uncommitted and expended status should be presented. The planned and actual cost of day-to-day activities and future JT&E activities should be presented when significant. Direct site monies, reimbursable funds, and contracts should be addressed when applicable.

JTF Problems and Solutions

This area of the review should remain flexible, as it is situation dependent. Nevertheless, it is important to keep DDT&E informed of problem areas encountered, solutions worked, outstanding problems, assistance needed, and the potential impact of the problems on the JT&E. Applicable areas in which DDT&E awareness is necessary include coordination of JTF requirements and projected JT&E requirements within OSD, the releasability of classified information, resource priorities, and OSD/Service coordination relative to participation in exercises, tests, or the support of dedicated JT&E activities. *DDT&E must approve any press statements or releases.*

P. TECHNICAL REVIEWS

Technical reviews are conducted primarily by the TAB. The composition, roles, and procedures for establishment and use of the TAB are contained in the *JT&E Procedures Manual DoD 5000.3-M-4*. These technical reviews serve two primary purposes. First, they validate JTF ideas, approaches, and methodologies using senior personnel with unique technical expertise. Second, they provide senior-level Service insights into the JT&E and can provide the JTD with valuable information and ideas on how to improve the program.

If the JT&E involves issues that pertain to policy, doctrine, or tactics, the technical reviews should also include presentations to a GOSC. The GOSC would consist of senior Service officers (1-2 star level) that would advise the JTD relative to Service policies, doctrine, tactics, roles, and missions. The organization and roles of the GOSC members would be dictated by the particular requirements of the JT&E.

Q. REPORTS

It is important that the JTD keep DDT&E informed of the program status. Problem areas encountered, solutions worked, outstanding problems and assistance required. The following reports are designed to achieve this objective.

Program Status Reports

In addition to the progress and technical reviews, the JTD will provide a monthly program status/activity report to the DDT&E. These reports are not intended to duplicate the information in the progress reviews, but rather keep OSD informed about how the JTF is faring, what the problems are, where OSD and Service help is needed, and what are the JTD recommended courses of action. The JTD should ask himself what would he want to know to help manage the JT&E and report that information. Because of the environment in which we work, the report must also address the current financial status. Funds should be delineated by source and year, amount received, committed, obligated, expended and the remaining available balance. The reports should not be extremely detailed nor time consuming for either the writer or the reader. Items to be considered for inclusion are:

- Numbers of personnel assigned. Gains and losses in terms of actual and projected.
- Trips by JTF personnel during the reporting period and projected trips for the upcoming period.
- Significant visits to the JTF during the reporting period and projected visits during the upcoming period.
- Schedule of upcoming activities.
- Highlighted issues related to Service coordination, resources, etc.
- Accomplishments.
- Problems.

These reports are intended to keep DDT&E apprised of JTF status and activities, and help DDT&E in his discussions when contacting or contacted by persons or agencies throughout the T&E community.

Financial Reports

The JTD will submit financial reports as required or requested to DDT&E to document the

financial status of the JTF. These reports will address major expenditures and commitments of OSD funds and the status of the JTF fiscal situation relative to fiscal schedules and funds. The resource manager is responsible for preparing these reports.

JT&E Activity Reports

The JTD will submit these reports to communicate the results of completed test activities (studies, field tests, mini-tests, modeling, etc.) to include findings, conclusions, and recommendations. Test activity reports will include descriptions of the data collected, an analysis of the data, results of the activity findings, and conclusions. These reports should also include any relevant information on instrumentation calibration, instrumentation specifications, and lessons learned. In the event of unexpected situations, additional activity reports may be appropriate. Collectively, these reports provide an audit trail for the development and validation of the JTF findings, conclusions, and recommendations. Each report will address the objectives for that test, and care will be taken to avoid premature assessments and conclusions relative to program issues. JT&E activity reports may be provided to requesters as approved by DDT&E.

Special Reports

The JTD will submit special reports to DDT&E to surface critical problems that require immediate attention and resolution that is beyond his capability. These reports differ from progress reports as they require expedient resolution of a significant problem. Special reports may also be used to respond to specific requests for data that may be generated prior to completion of a test activity report or the program final report. All requests for such data will be submitted through DDT&E and all responses will be routed through DDT&E. The JTD should exercise caution to ensure that such reports do not suggest premature conclusions that may be based on incomplete or insufficient data.

When required, special reports will be submitted not later than 45 days after receipt of a request. In those cases where the requested information is not yet available, the JTD will notify the requesting agency as to the status of the request and the anticipated date that the information will be available. A formal briefing will not normally be developed in conjunction with the submission of special reports.

JT&E Final Report

This report is the most important document that the JTF will produce. It is the documentation upon which OSD and the Services will base their decisions relative to implementation of JTF recommendations or institutionalization of JTF developed products. It is incumbent on the JTD to devote the required time and resources to assure that the final report and its accompanying briefings are quality products and that they contain meaningful results, conclusions, and recommendations. Further, these reports and briefings must be supported by precise and reasonable documentation. The JT&E final report should be fully coordinated with OSD, the Joint Staff, and the Services before presentation to the TAB and SAC. The final report should discuss in detail the background and problem that generated the requirement for a JT&E; the JT&E scope,

scenario, concept, methodologies, assumptions and limitations; the APA; the JT&E activities and events; and the JTF findings, conclusions, and recommendations. If the JTF recommends the institutionalization of JTF developed products, the final report should also include specific recommendations for where and how the institutionalization should be accomplished and who will be responsible for oversight of the implementation actions. An example of a format for the JT&E final report and briefing is included in Annex L. These formats should be tailored to the specific requirements of the JTF.

JTF Management Report

The joint test management report should be completed within *30 days* following presentation of the JTF final report to DDT&E. This report serves three purposes. First, it provides DDT&E with the JTD's assessment of the JT&E, to include accomplishment of the chartered mission. Second, it documents lessons learned for consideration in the organization and management of future JTFs. Third, it provides recommendations for actions to improve the efficiency and effectiveness of future JT&Es. In the preparation of this report, the JTD should separate those lessons learned and recommended actions identified during previous JTF, from those that are new or unique. Feedback on problems and solutions (successful or not) from previous JT&Es should be included. An example of a format for the JTF management report is included in Annex L. *Documenting lessons learned has been one of the poorly supported parts of the JT&E process.* Documenting a lesson learned is frequently interpreted as admitting a mistake. Lessons learned seldom benefit the author and thus frequently receive a minimal level of effort. This report, however, can be of significant value to the effectiveness of future JT&Es.

CHAPTER 4
RESOURCE MANAGEMENT

A. INTRODUCTION

Resource management involves identifying and quantifying the resources that will be required to accomplish the JT&E activities, as well as programming, budgeting, accounting for, and controlling the required resources.

B. RESOURCE PLANNING

Most of the personnel, equipment, and facilities required to support the JT&E will be provided by the Services. The Services will include these JT&E resource requirements in their resource management planning to insure that the resources and funding are available to support the requirement. The JFS, in coordination with the lead and participating Services, should have developed an estimate of the resources required to support daily JTF operations and to execute each of the JT&E activities in the APA. These estimates of resource should have been consolidated into a single document, the Consolidated Resource Estimate (CRE). An outline for a CRE is included in the JFS Handbook as Annex I.

The JFS Service deputies should also have consolidated those portions of the CRE that are applicable to their respective Service and prepared them in the proper format for submission to the Service OTA. Daily JTF support requirements should also be included in the resource requirements submitted to the Service OTAs and should be annotated to reflect that they support daily JTF operations. These

requests for resources should be available to the JTD at JTF charter. If the request for resources was done by the JFS Team, the JTF should review and submit them to the respective OTAs as soon as possible. This will provide an initial establishment of JTF resource requirements in the Service resource management planning systems. The JTF should then revise these resource requests as JTF planning matures or as significant changes occur. If the JFS did not accomplish a CRE or prepare the Service request for resources, the JTD must make the submission of resource requirements to the Service OTAs a priority action for the JTF.

Requirements for unique resources must be identified so that JTF programming actions can be initiated to acquire them. These unique resources will primarily involve instrumentation, equipment modifications to accommodate unique instrumentation, instrumentation interfaces, and essential test control equipment that cannot be obtained from OSD or Service sources.

C. PROGRAMMING FOR THE REQUIRED RESOURCES

The JTD should program for unique JTF resource requirements by including the cost for such requirements in the JTF budget. The Army and Air Force have organizations to support and monitor their Service's involvement in JTFs and have established formal processes to program, manage, and provide resources to joint test programs. The Navy and Marines have established staff responsibilities for JT&E

support on a case-by-case basis along operational staff functional lines of interest. When JT&E support is approved, a Navy or Marine staff sponsor is assigned to program for and provide the required resources.

No matter what form the Service JT&E support agencies take, it should be noted that the process for programming and providing the required resources can take in excess of a year. Thus, Service resources may not be available for the first 12-14 months of a 36-month JT&E program. *It is imperative that JT&E resource requirements be submitted by the JTD to the Services in the proper formats as soon as possible after the JTF is chartered.* The following are detailed explanations of how the Service systems program and provide the required resources to support JT&Es.

United States Army

The Operational Test and Evaluation Command (OPTEC), in coordination with the Deputy Chief of Staff for Operations (DCSOPS), is the overall Army manager and resource provider for joint tests. OPTEC has established a continuing interdepartmental Army committee, the Test Schedule and Review Committee (TSARC) that provides centralized management of Army resources to support all test activities. The formal document for submitting request for Army resources to the TSARC is the Outline Test Plan (OTP). New or revised OTPs are forwarded to OPTEC for review and coordination prior to presentation to the TSARC for their consideration.

The **TSARC** meets bi-annually to review and approve or disapprove requests for utilization of Army resources in support of test activities. The purpose of the TSARC is to maximize the use of limited resources and minimize the impact of these activities on units and their readiness. OPTEC publishes a *TSARC Handbook* that contains the guidelines and procedures for requesting Army resources. Copies of the *TSARC Handbook* can be obtained through OPTEC CSTE-OPM, telephone (703) 756-1516. TSARC responsibilities include:

- Reviewing and recommending coordinated OTPs for inclusion in the Five Year Test Plan (FYTP).
- Ensuring adherence to the one year notification requirement for resource commitments or enforcing compliance with the exception policy.
- Reviewing and recommending approval of T&E priorities.
- Reviewing and coordinating resources for support of T&Es.
- Resolving conflicts between user test requirements and other missions.

New OTPs are submitted in March or September of each year using the format contained as Appendix A to the *TSARC Handbook*. They should contain maximum requisite information on support requirements available at the time of submission. Once submitted, OTPs are updated through the TSARC process in March or September of each year as revised OTPs. *OTPs are submitted for TSARC consideration at least one year before the first resource is required to allow resource planning against*

approved OTPs. If the Army resources are to be provided by the major command (MAJCOM) or field operating agency (FOA) responsible for the OTP, the OTP may be submitted one TSARC cycle (i.e. six months) before the scheduled test date. This will ensure that the required resources are entered into the FYTP at least one TSARC cycle in order to provide for the monitoring of test resources and test status. OTPs that do not provide at least one year between TSARC approval and first resource commitment will be processed as an exception to policy. Exceptions to policy OTPs will be forwarded to the TSARC under a cover letter signed by a general officer of a TSARC member headquarters, stating justification for the requested policy exception.

United States Air Force

Air Force Instruction 99-106, *Joint Test and Evaluation,* 18 Mar 94, provides guidelines and procedures for Air Force participation or support of JT&E programs directed by OSD. It describes the responsibilities, planning, and execution for JT&E participants. HQ USAF/TE sets Air Force policy for JT&Es and is the office of primary responsibility (OPR) for Air Force participation in the JT&E program. The Air Force Operational Test and Evaluation Center (AFOTEC) assists HQ USAF/TE in the execution of the JT&E program and is designated as the Air Force manager for chartered JT&Es. All requests for JT&E dedicated manpower support are forwarded to AFOTEC for processing and HQ USAF/TE validation. AFOTEC/XRJ is the AFOTEC JT&E action office and receives specific JT&E support requests. The formal document for requesting resources from the Air Force to support joint tests is the Test Resource Plan (TRP). The guidelines and procedures for

requesting Air Force resources for a JT&E are contained in *AFOTECI 99-101* and *AFOTEC Pamphlet 55-8*. Copies of this instruction and pamphlet can be obtained by contacting AFOTEC/XRJ, telephone (505) 846-5339.

AFOTEC/XRJ:
- Assist in the preparation of TRPs.
- Monitors Air Force support of JT&Es.

MAJCOMs and FOAs will provide most of the resources and personnel to support JT&Es. Each MAJCOM and FOA will maintain a POC for JT&E matters. Information relative to these points of contact can be obtained from AFOTEC/XRJ. MAJCOMs and FOAs are responsible for:
- Supporting AFOTEC in interfacing with the JT&E directors.
- Providing personnel and equipment as tasked in Air Force test directives.
- Programming resources against approved TRPs.
- Evaluating JT&E impacts on operational capabilities.

TRP is the vehicle for integrating JT&E resource requirements into the Air Force resource planning, programming, budgeting, and execution system. The guidelines and procedures for preparing and submitting the TRP are contained in *AFOTEC Pamphlet 55-8*. New TRPs will be coordinated with the appropriate commands and agencies and forwarded to AFOTEC/RM to coincide with the two established TRP cycles, October through December and April through June. Out-of-cycle TRPs may be submitted if major program restructuring or other substantial changes occur. TRPs will be kept current to reflect maturing

JT&E resource requirements. TRPs should be revised as soon as program or test schedules change and should always reflect the most current status of resource requirements.

United States Navy

The principal POC for JT&E is located in the Office of the Director of Test and Evaluation and Technology Requirements (N091), specifically in the Test and Evaluation Division (N912D2). The JT&E POC who provides liaison and interface with OSD on JT&E policy and resources issues is N912D2. In contrast to the Air Force and Army, the Navy selects and delegates authority and responsibility for JT&Es on a case-by-case basis.

For Navy support of a specific JT&E, N091 will be responsible to staff the selection of an appropriate sponsor from the Chief of Naval Operations (CNO) staff organization and will assign a Test and Evaluation Identification Number (TEIN) and a CNO priority. The CNO staff sponsor is responsible for staffing the selection of a field-level Navy agency to support the JT&E. The responsibilities and staff actions within the CNO staff for JT&Es are shared between N912D2 and the technical sponsor. This procedure provides a team approach where the JT&E POC is knowledgeable concerning the entire spectrum of JT&E activity, the CNO sponsor provides specific functional expertise, and the field level sponsor supports the JT&E.

There are no specific Navy directives relative to obtaining resources to support a joint test. Resource requirements must be requested and arranged for on a case-by-case basis through the CNO and field level sponsors.

N091 is responsible for obtaining and assigning the TEIN, the CNO priority, and staffing the selection of the CNO staff sponsor.

CNO sponsor is responsible for staffing the selection of the field level sponsor and for providing the field level structure for supporting JT&Es.

Field level sponsor is responsible for staffing and providing resource requirements for the JT&E to include the request for manpower billets and the requisition of personnel.

The Operational Test and Evaluation Force (OPTEVFOR) is the independent operational test agency for the Navy and is responsible for the operational test and evaluation of weapons systems, ships, aircraft, equipments, procedures, and tactics. OPTEVFOR is a valuable source of testing expertise and assistance to the JT&E.

United States Marine Corps

Within the Headquarters Marine Corps (HQMC) staff, the responsibilities for JT&E support are shared between several deputies. The Deputy Chief of Staff for Requirements and Programs (DC/S R&P) is responsible to coordinate Program Objective Memorandum (POM) activities. The Deputy Chief of Staff for Manpower and Reserve Affairs (DC/S M&RA), after consultation with Marine Corps System Command (MCSYSCOM) and the Director Marine Corps Operational Test and Evaluation Agency (MCOTEA), is responsible for the validation of manpower and personnel requirements and the identification of Service representatives for approved JT&Es. The Fiscal

Director of the Marine Corps (FDMC) is responsible to coordinate with the DC/S R&P to ensure that budgetary and programmatic decisions support the JT&E, the Marine Corps mission, and the budget.

MCO 5000.11B is the Marine Corps Order (MCO) governing test and evaluation to include participation in and support of JT&Es. This MCO is being revised. The FSD should obtain a current version by contacting the MCSYSCOM JT&E POC at telephone (703) 640-5963.

Request for Marine Corps resources to support a JT&E are staffed on a case-by-case basis. The principal POC for a specific JT&E is MCSYSCOM, specifically the Test and Evaluation Division (MCSYSCOM/T&E). MCSYSCOM/T&E will coordinate requests for resources with the appropriate HQMC staff and MCOTEA. The HQMC staff will coordinate those actions necessary to provide the approved resource support. MCOTEA will recommend to the Commandant of the Marine Corps (CMC) the selection of a Fleet Marine Force (FMF) to support the joint testing. The FMF will designate FMF coordinators at applicable units and provide the approved resources and support.

MCSYSCOM/T&E is the principal POC for all JT&E support requirements to include technical assistance, personnel, equipment, and forces.

DC/S R&P, after consultation with MCSYSCOM and the Director MCOTEA, is responsible for the validation of manpower and personnel requirements and the identification of

Service representatives for approved JT&E positions.

MCOTEA is the Marine Corps independent T&E organization responsible for adequate testing, objective evaluation, and independent reporting in support of the Marine Corps acquisition process. MCOTEA is also responsible to recommend to CMC the selection of the FMF to support joint testing; to provide technical support to the Marine Corps joint technical director in the form of assistance in test planning, direction, and reporting; to ensure the quality control of Marine Corps participation; and to conduct independent evaluations as may be required.

FMFs are responsible to designate test coordinators in the FMF headquarters and at each division or wing and to provide the approved resources required to conduct or support the JT&E.

D. RESOURCE BUDGETING

Budgeting for the required resources involves two functions, estimating the cost of the required resources and including these costs in the applicable budgets. Chapter 2 **(Figure 2-1)** outlines the OSD and Service responsibilities for providing the required JTF expenditure and resources. Once the resource requirements are submitted to the Service OTAs, the Services are responsible for including the JT&E resource requirements in their resource management planning systems and including these requirements in their respective budgets. Those resource requirements that are an OSD responsibility should be included in the JTF budget.

Cost Estimates

Cost estimates of the required resources should be developed by quantifying each of the required resources in terms of what will be required; where, when, how long it will be required; and how it will be provided at the required location. This is accomplished by decomposing the CRE into specific items, costing each, and then aggregating the cost by time and responsibility. The CRE decomposition should be tailored to the unique requirements of the JT&E. The following are suggested topics that should be considered in a breakdown of the resource requirements in the CRE.

- **Category** (personnel, facility requirements, transportation, materials, support equipment, aircraft sorties, etc.).
- **Type** (rank, technical qualifications, type of aircraft, secure space, etc.).
- **Location** (home, deployed, labs, ranges, etc.).
- **Duration**.
- **Relocation/transportation** requirements.

Each JT&E is unique and may require unique data collection and analysis equipment. However, there are many items and requirements that are similar and constant between JT&Es. Annex H is an example of a cost/budget matrix that can be used to identify and cost JT&E resource requirements. The matrix will have to be adjusted and tailored by the JTF to meet the individual needs of the JT&E.

The categorization of resource requirements will allow the JTF to fully define each in order to more accurately estimate its cost. The cost for the use of range and laboratory facilities should

be obtained directly from the facility operators. The cost associated with Service provided resources could be obtained by the JTF deputies through interface with their Service's operational commands and logistics agencies. The cost of satisfying unique JTF hardware, software, instrumentation, interface, and/or modifications should be obtained from the most reliable source available to the JTD (OTA, labs, ranges, vendors, etc.). DESA may be a source of cost information, as well as the provision of instrumentation, data collection, and analysis hardware and software.

The cost of the individual items are then aggregated by location, time, and responsibilities (OSD, the Services) and incorporated into the applicable budgets. If the estimated cost for the unique requirements exceeds the fiscal guidelines outlined for the JT&E by DDA&SP, the JTF should consider programmatic or technical restructuring of the JT&E to reduce the estimated cost. The following are guidelines for determining cost responsibilities of the CRE items:

OSD provides partial funding to JT&Es in accordance with the *DoD Budget Guidance Manual (DoD Manual 7110-1)*. These OSD funds (PE 0605804D) are used to pay costs incurred for the direction, supervision, and performance of the JT&E and those that are unique to JT&E needs such as the procurement, installation and operation of unique instrumentation; transportation, travel, and per diem cost for the JTF staff; modifications of test articles; data collection, reduction and analysis, and test reporting; and reimbursable cost identified in *DoD 3200.11, Use Management and Operation of DoD Ranges and Test Facilities*. Thus, costs

that are incurred solely as a result of conducting a JT&E and that cannot be regarded as providing long-term mission-oriented benefits are normally funded by OSD.

Services, through operations and maintenance budgets, are responsible for funding normal operational expenditures such as civilian pay, travel (for other than the JTF staff), transportation, utilities and rents, Service owned equipment maintenance, supplies, printing, reproduction, and communications in support of a JT&E. The Services also provide the support budgets and funds for normal operations such as the cost of non-industrial funded aircraft operations, OPTEMPO, TDY cost for Service exercise participants, and personnel other than the JTF staff who are involved in test activities, and common support of Service test equipment. The JTD and the JTF resource manager will monitor the status of funds allocations, commitments, and utilization and will provide reports on fiscal status and requirements.

E. RESOURCE ACCOUNTABILITY

The JTD is accountable for the control, use, and expenditure of all resources assigned to or used during the JT&E. The test managers are responsible to the JTD for the control, use, and expenditure of all resources used in support of their test activities. The JTD and test managers are supported by a JTF resource manager. The JTF resource manager is responsible for tracking all assigned, acquired, procured, and allocated resources and preparing all resource related reports. The JTF resource manager is also responsible for keeping the JTD apprised of

resource situations that could impact on the JT&E. Resource accountability will basically involve two functions, funds and assets accountability.

Funds

The JTD must coordinate with the supporting and finance office at the host installation to establish an account and system to track the commitment, obligation, and expenditure of funds throughout the life of the JTF. The established account and tracking system will be used to track funds and expenditures and enable the JTF resource manager to identify trends and cost factors that may project a deficit or surplus of funds. JT&Es are partially funded by OSD in accordance with the directions contained in *DoD Manual 7110-1*. These funds are used to pay costs that are unique to the needs of the JT&E such as the procurement, installation, and operation of unique instrumentation; transportation, travel, and per diem costs of the JTD and staff; test article modifications to obtain test data; data collection, reduction, and analysis; and test reporting for the involved Services. The Services are reimbursed for unique costs incurred as a result of the JT&E but not for normal O&M expenditures such as civilian salaries, travel for other than the JTF staff, transportation, utilities and rents, Service-owned equipment maintenance, supplies, printing and reproduction, and communications in support of the JTF. A Military Interdepartmental Purchase Request (MIPR) will normally be used for the procurement of materials, Services, supplies, and equipment purchased from other DoD components.

Assets Accountability

Property accountability of JTF assets will be maintained through a system of property books and hand receipts. The property books should list all JTF properties (assigned or acquired) by type, serial number, who the property is assigned to, where the property is located, and the organization from which the property was obtained. Each property should be uniquely marked with a JTF identification and serial number. Accountable property procured with DoD funds will be recorded in the DESA property book as they are the custodian for DDT&E property. The JTD will receipt for installation property received from the designated host installation organization or officer. Service resources used during a JT&E will remain on the property books of the organization providing the resource. If a representative from the providing organization is not on-site at the test activity location, the test manager will receipt for the property to the owning organization. A detailed resource list will be developed for each test activity and will be updated throughout the planning process as requirements are refined. The detailed resource list will include all tactical and non-tactical equipment such as instrumentation, communication systems, tools, and expendable materials. The JTF should establish a local checking account *(imprest account)* with the host installation to support unexpected supply requirements.

Key resources (personnel, aircraft, flying hours, test range hours, munitions, etc.) used to accomplish the JT&E will be documented in the test report or other media to be used for future test resource estimates or for responding to inquiries.

The JTD is responsible for the disposal of all JTF resources and the test managers are responsible for the disbanding of test teams and the disposal of resources associated with their test activity. The JTF should develop a checklist for assuring that all acquired resources are returned in proper condition to the appropriate custodians or are disposed of in accordance with applicable directives.

CHAPTER 5
CLOSE DOWN OF JTF

A. INTRODUCTION

Close down is the last phase of the JTF and perhaps the most demanding in terms of the work to be accomplished within the time available. The JTD should initiate the development of a simple Close Down Plan (CDP) early in the JTF to identify those actions that must be accomplished and a schedule for their completion. The identified actions will include the preparation and coordination of the final report, the release of personnel, personnel efficiency reports, personnel awards and recognitions, the accounting for and return of property, the termination of contracts, the termination of support agreements, the close out of fiscal accounts, and the return of facilities.

B. FINAL REPORT COORDINATION AND BRIEFINGS

Preparation of the JTF final report should start early and should continue in parallel with completion of JT&E activities. *Some of the report "boiler plate" can and should be developed as early as possible.* Sections of the report should be completed as data and information are collected and analyzed and conclusions are reached relative to program issues. A final draft of the report should be completed in sufficient time to allow for coordination with OSD, the Joint Staff, and the Services prior to submission to the TAB and the SAC. Coordination should be in accordance with the coordination chain previously established. This can take up to six weeks with revisions, and follow on coordination may take another two weeks. The JT&E final report will be presented to the TAB and SAC for concurrence and to DDT&E for approval.

Finalization, production and distribution of the JT&E final report should be completed at least two weeks prior to the scheduled close down date. Any continuation of work on these documents after that date can be affected by the administrative and logistical actions associated with the close down of the JTF. These close down actions include the transfer of the remaining assets (computers, printers, ADP, etc.) back to the controlling organizations or agencies and the transfer of the JTF facilities back to the host installation.

The JTD should present briefings on the findings, conclusions, and recommendations of the JT&E to key DoD, Joint Staff, and Service organizations in conjunction with the coordination of the JTF final report. *These briefings are particularly important for gaining acceptance and support of the JT&E findings, conclusions, products and recommendations.* Conduct of these briefings can be time consuming and will necessitate planning and coordination to maximize the number of briefings that can be accomplished on each trip. *Read-ahead copies of the briefings should be provided* to the respective organizations prior to scheduled briefings.

C. INSTITUTIONALIZATION

By definition, joint tests address and evaluate solutions to problems or deficiencies in joint operations. In most cases, the JTF evaluation of the JT&E concepts and issues will result in specific recommendations for changes in policies and procedures. In some cases, the JTF will develop products that represent significant improvements in operational capabilities or the way that OSD, the Joint Staff, the CINCs, and the Services do business. JTF recommendations and products can come in many forms that range from changes in policy directives to methodologies for evaluating operational systems. None of the JTF recommendations and products represent improvement in joint operation capabilities, however, unless they are implemented and institutionalized.

The JTF should conduct a study to evaluate the requirement for implementation of the JTF recommendations and products. The study should as a minimum address the following:

- What specifically is the problem?
- How large is the problem?
- What causes the problem?
- Identify corrections to the problem.
- Identify who should be responsible for implementing the recommended corrections.
- Identify who should be responsible to monitor the corrective actions to assure that the problem does not recur.
- Determine the cost to implement in terms of manpower and budget.
- Determine an estimate of savings and improvements in efficiency or joint capabilities.

If the JTF study determines that implementation actions are warranted, the JTF should develop a plan for institutionalization of the results and products. This plan should address all facets of the JTF recommendations to include *who, where,* and *how* the JTF recommendations and products should be institutionalized. The plan should be coordinated with all agencies or organizations that would be involved in the institutionalization. The plan should then be presented to DDT&E for approval.

D. PERSONNEL

Once the final JT&E test activities are completed, the focus of the JTF and the corresponding personnel needs will shift to program-level activities such as analysis, compilation of information for the production of program level reports, and the inventory and disposition of assets. These activities will involve specific personnel resources, which in most cases will not include all personnel assigned to the JTF. As such, some personnel can be released after completion of the final test activity and others can be released shortly after completion of certain close down actions.

The JTD should identify the personnel who need to remain until close down and develop a time-phased schedule for their release and transfer. This schedule should be accomplished 8-12 months before close down so that all personnel have an approximate date for reassignment (to initiate actions to obtain another position) and so that all know what is expected of them after completion of the final test activity. Failure of the JTD to take early action in this area could result in personnel initiating their own

actions relative to follow-on employment and assignments, which could result in the unexpected departure of key personnel during the critical close down phase.

Service personnel will begin to focus on their next assignment as they see the end of their current assignment approaching. Most will contact their personnel assignment agencies to express desires for specific assignments and to influence their reassignment dates. Many will desire to move during the summer months. Personnel being reassigned to career development schools will be departing in the June-August time frame. Given this situation, the JTD should consider both the JTF requirements and the individual's career. There will be tough decisions to make regarding the select personnel that are to remain until close down and the JTD should involve the Service deputies in these decisions. Once the decisions have been made, the information should be conveyed to the respective military personnel centers so that appropriate reassignment actions can be initiated. This should be done at least six months prior to completion of the final JT&E test activity. The JTD and deputies should recognize that they may have little control over the reassignment of some personnel, particularly those scheduled to attend Service schools.

Civil Service personnel will most likely be reassigned to organizations on the host installation. The JTD should alert and coordinate with the host installation Civilian Personnel Office (CPO) relative to the projected JTF completion date and the necessity to find jobs for the Civil Service personnel. The transfer of Civil Service personnel is dependent on existing vacancies, the career fields and grade levels of these vacancies, and the interview and acceptance of the individuals by management personnel.

With few exceptions, the JTD must be prepared to release Civil Service personnel as soon as they are able to obtain a position in another organization. This may create voids in the capabilities required to finalize JTF products and necessitate that the JTD consider alternatives for obtaining the required support.

Contractor personnel often constitute the most stable personnel resource available to the JTF during close down as they do not have the same reassignment pressures as the military or Civil Service personnel. Thus, they will remain available to support the JTF up to the closing date. Contractor personnel may be required to fill voids created by the early release of military or Civil Service personnel. The use of contractor personnel to provide this augmentation may necessitate a revision of the support subtask to assure that the required support is within the scope of the contract.

Appraisal Reports

During the close down phase, the JTD should give special attention to personnel appraisal reports. This involves preparation and submission of the appraisal reports or providing inputs to the individuals rating officials. In the case of Civil Service personnel, failure to submit or provide a timely input to an appraisal report could have serious consequences on the individual. The intensity of activity during the close down phase and the focus on work completion often results in appraisal inputs being overlooked or hastily provided. Once again, the

CDP should include a schedule for providing inputs into the personnel appraisal systems.

Awards and Recognition

As the JTF nears completion, attention needs to be given to the recognition of those personnel and organizations that have provided extraordinary support to the JTF. Since the JTF is a joint activity, formal awards to individuals for performance on the JTF should be joint awards. In many cases assignment to the JTF may represent the individual's only opportunity to receive a joint award. OSD award recommendations should be forwarded to DDT&E 90 days prior to the desired date of presentation for review. The recommendation will be forwarded to a joint awards board for consideration and approval. In some cases, the disapproval of a recommendation will be conveyed through the approval of a lessor award. If there is cause to rebut the downgrade, the JTF should submit another recommendation with a stronger justification. JTDs should be prepared to rebut a boards' downgrading if there are strong feelings about the individual's performance and accomplishments. Submission of personnel for a Service award in lieu of a joint award is an alternative. *In no case should an individual be submitted for both a joint and Service award for performance, or achievement associated with the JTF.* Service recommendations for awards should be submitted by the Service deputies in accordance with Service procedures.

Each Service operates differently, and the individual may have preferences relative to when and where an award is to be presented. Both must be considered relative to the establishment of a suspense for award submissions. When and where the award will be presented may also be influenced by a downgrading and resubmission of a recommendation.

Awards and recommendations for Civil Service personnel should be coordinated with and submitted through the host installation CPO. JTFs may also consider presentations of awards to organizations and individuals that provided support to the JTF or to individuals who contributed significantly to the JTF's accomplishments. Some of these awards could be Joint Achievement Awards to organizations or individuals for their contributions during a particular time or event. OSD Certificates of Achievement are available to give special recognition to supporting organizations or individuals. These two recognitions require formal submissions with justification to DDT&E for approval. Some JTFs have also used self developed awards and certificates. These awards and certificates must be funded from contributions by JTF members and cannot be funded with OSD or Service funds.

The JTD should not overlook facility support provided by the host installation's agencies. Other JT&E activities may subsequently be located at the same facility and will require cooperation and support from many of these same agencies.

E. DISPOSITION OF ASSETS

Close down of the JTF will involve the disposition of two categories of assets: facilities and property. The JTD should plan to dispose of these assets in accordance with the appropriate policies and procedures.

Facilities

The return of the facilities will be in accordance with procedures coordinated between the JTD, the lead Service OTA POC, and the host base installation office.

Property

The JTF may end up with three sets of property that must be disposed of: that provided or purchased by the Services, that provided by OSD, or that purchased with OSD funds.

Service property provided or purchased by the Services remains the property of that Service and will be returned to that Service when no longer needed. Return of the property should be coordinated through the Service OTA POC, who will define disposition procedures. An inventory of all such property will be conducted prior to physical transfer of the property back to the Service.

As the JTF nears completion of its program, the JTF should contact the respective Service OTA POCs so that provisions can be made for the transfer of property to an organization of that Service. In some instances, another JTF may have need for some of this property. If this is the case, the JTF Service deputy should coordinate with the Service OTA POC and the other JTF relative to the possible transfer of the equipment from one JTF to another. The OSD JT&E Coordinator should also be notified to ensure that the property being transferred is not part of a larger system of which a portion may consist of OSD purchased equipment.

OSD property purchased by DDT&E, or purchased by the JTF with OSD funds, is and remains the property of DDT&E. All OSD property assigned to or purchased by the JTF, either through contracts or by US Government agencies will be returned to OSD control when no longer required for the JTF mission. An inventory of OSD property will be conducted prior to the transfer of OSD property.

In no case should the JTD take any action or make any commitments regarding the disposition of OSD property to another JTF, or other organization without prior coordination with DDT&E. While there may be a valid need for some of the OSD property by organizations outside the JT&E community, OSD property will not be transferred to these organizations without DDT&E approval.

In cases involving institutionalization, special provisions may be made by OSD and the Services for the temporary reassignment of specific items of property to aid in the institutionalization of the JTFs procedures, methods, or products.

F. JTF PRODUCTS

The JTF will produce products that have value to areas other than JT&Es. Such products include models, simulations, and databases produced or used by the JTF.

Models and Simulations

If the JTF has adapted or developed a model for its use, it represents a product of the JTF. The lead Service will retain a copy of all models and simulations employed in the JT&E program

for use in the performance of its mission and for issuance to future JFSs and JTFs that may have a need for them. A JTF that acquires, modifies or develops a model or simulation should provide the lead Service modeling and simulation agent with the model or simulation to include the documentation (user instructions and technical details regarding the models structure) required for subsequent use or modification of the model or simulation.

Databases

In most cases, considerable JTF efforts were expended in the collection of data and the development of a database. These represent products that should be archived and protected from corruption to ensure availability to other JT&E and Service programs. All JTF data and databases should be transferred to the Services. As with models and simulations, each Service has a principle recipient of JT&E databases and controls their transfer to future JFSs, and JTFs.

Documents and Reports

All technical documents (observations, findings, recommendations, results) and reports produced by the JTF will be approved by DDT&E prior to archiving in supporting technical libraries. Copies of all approved technical documents and reports should be forwarded to the AFOTEC library for permanent storage. The address for the AFOTEC library is listed in Chapter 2. Copies of all DDT&E approved technical documents and reports that are pertinent to the DoD mission, contribute to the DoD, or national scientific or technological base should also be forwarded to the Defense Technical Information Center (DTIC). Procedures for submission of technical documents and reports to DTIC can be obtained by contacting:

> Defense Technical Information Center
> (DTIC/OCP)
> Cameron Station, Building 5
> Alexandria, VA 22304-6145
> Telephone: (703) 274-6847

G. CONTRACTS AND SUPPORT AGREEMENTS

All contracts and agreements that were established by the JTF should be closed and some may require special actions associated with the close out. The OSD JT&E Coordinator will be available to assist in this area. An initial action required in the close out of a contract is a review relative to completion date, level of effort, and scope. The contract should be evaluated in terms of the remaining JTF requirements, available resources, level of effort remaining, and the funding available to complete the work. If it is determined that no additional support is required for the completion of the JTF or to support close down plans, action should be initiated to close out the contract(s). The JTD should also terminate all support agreements with host-installation and supporting organizations and agencies.

H. CLOSE OUT OF FISCAL ACCOUNTS

Even after a JTF closes its doors, the clean up of financial matters will continue. Late billings

and final contract dispositions will create requirements for funds after the JTF is disestablished. The OSD JT&E Coordinator will provide assistance to the JTF financial manager in this area, specifically in the area of the transfer of fiscal responsibilities from the JTF to OSD.

ANNEX A
LIST OF ACRONYMS

ACC	Air Combat Command (Air Force)
ADP	Automated Data Processing
AFOTEC	Air Force Operational Test and Evaluation Center (Air Force)
APA	Analysis Plan for Assessment
C2	Command and Control
C3	Command, Control and Communications
CATEX	Categorical Exclusion
CDP	Close Down Plan
CINC	Commander in Chief
CMC	Commandant of Marine Corps (Marine Corps)
CNO	Chief of Naval Operations (Navy)
COI	Critical Operational Issue
COMSEC	Communications Security
COTR	Contracting Officer's Technical Representative
CPO	Civilian Personnel Office
CPX	Command Post Exercise
CRE	Consolidated Resource Estimate
DBMS	Database Management System
DCSOPS	Deputy Chief of Staff for Operations (Army)
DC/S M&RA	Deputy Chief of Staff for Manpower and Reserve Affairs (Marine Corps)
DC/S R&P	Deputy Chief of Staff for Requirements and Programs (Marine Corps)
DDT&E	Deputy Director Test and Evaluation
DESA	Defense Evaluation Support Activity
DIA	Defense Intelligence Agency
DMAP	Data Management and Analysis Plan
DoD	Department of Defense
DoDD	Department of Defense Directive
D,T,SE&E	Director, Test, Systems Engineering and Evaluation
DTD	Deputy Test Director
EA	Environmental Assessment
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
FCC	Federal Communications Commission
FDMC	Fiscal Director Marine Corps (Marine Corps)
FFRDC	Federally Funded Research and Development Center
FMF	Fleet Marine Force (Marine Corps)
FOA	Field Operation Agency (Air Force and Army)
FONSI	Finding of No Significant Impact
FSD	Feasibility Study Director
FY	Fiscal Year
FYTP	Five Year Test Plan (Army)
GOSC	General Officer Steering Committee
GPS	Global Positioning System
HQMC	Headquarters Marine Corps (Marine Corps)
IDRL	Integrated Data Requirements List
IPR	In Progress Review

ISA	Inter-Service Support Agreement
IV&V	Independent Verification and Validation
JCS	Joint Chief of Staffs
JFS	Joint Feasibility Study
JT&E	Joint Test and Evaluation
JTD	Joint Test Director
JTF	Joint Test Force
LAN	Local Area Network
MAJCOM	Major Command (Air Force and Army)
MCSYSCOM	Marine Corps Systems Command
MCSYSCOM/T&E	Marine Corps Systems Command/Test and Evaluation
MCO	Marine Corps Order
MCOTEA	Marine Corps Test and Evaluation Agency
MIPR	Military Interdepartmental Purchase Request
MLM	Mission Level Measure
MOA	Memorandum of Agreement
MOE	Measure of Effectiveness
MOT&E	Multi-Service Operational Test and Evaluation
MOP	Measure of Performance
NEPA	National Environmental Policy Act
N091	Office of Director of Test and Evaluation (Navy)
N91202	Office of Director of Tests and Evaluation and Technology Requirements, Test and Evaluation Division (Navy)
NSA	National Security Agency
O&M	Operations and Maintenance
OCA	Original Classification Authority
OPSEC	Operational Security
OPTEC	Operational Test and Evaluation Command (Army)
OPTEVFOR	Operational Test and Evaluation Force (Navy)
OSD	Office of the Secretary of Defense
OTA	Operational Test Agency
OT&E	Operational Test and Evaluation
OTP	Outline Test Plan (Army)
PC	Planning Committee
PCS	Permanent Change of Station
PID	Program Initiation Document
POC	Point of Contact
POM	Program Objective Memorandum
PTP	Program Test Plan
PY	Program Year
QA	Quality Assurance
SAC	Senior Advisory Council
SCG	Security Classification Guide
SCI	Special Compartment Information
SCIF	Special Compartmented Information Facility
SME	Subject Matter Expert
SOFA	Status of Forces Agreement
SSO	Special Security Office
T&E	Test and Evaluation
TAB	Technical Advisory Board
TAG	Technical Advisory Group
TDY	Temporary Duty
TEIN	Test and Evaluation Identification Number (Navy)
TF	Test Force

TM	Test Manager
TRP	Test Requirements Plan (Air Force)
TSARC	Test Schedule and Review Committee (Army)
TSPI	Time, Space, Position Information
TTP	Tactics, Techniques, and Procedures
UDS	Universal Documentation System
UIC	Unit Identification Code
WBS	Work Breakdown Structure

ANNEX B
GLOSSARY OF TERMS

Analysis Plan for Assessment (APA)

A document published by the JFS team that stipulates what actions must be accomplished by a JTF in order to collect and analyze sufficient data to resolve the JT&E issues and/or concepts. The APA specifies what must be done in sufficient detail so that the JFS team can quantify the resources required to accomplish the JT&E.

Battalion Training Strategy (OPTEMPO)

The actual cost of parts and fuel to operate annual miles for vehicles and hours for aircraft executing training in the field army.

Critical Operational Issues (COI)

The major issues (questions/problems) that a JT&E is addressing, usually phrased in the form of questions.

Data Management and Analysis Plan (DMAP)

A program level document that details what data will be collected, how it will be cataloged, stored, controlled, analyzed, and archived. The program DMAP also contains detailed procedures for these functions. A DMAP may also be required to detail what and how data will be collected, managed, and analyzed for a specific test activity.

Defense Evaluation Support Activity (DESA)

A DoD support organization available to JFS and JTF teams for advice and support regarding virtually all aspects of JT&E.

Designated Support Agent

The organization or agency that is designated by competent authority to provide support to a JT&E. Frequently referred to as the support agent.

Environmental Assessment (EA)

A study required by the National Environmental Policy Act (NEPA) to determine if significant environmental impacts are expected from a proposed activity.

Environmental Impact Statement (EIS)

A report required by NEPA that describes the environmental consequences of a proposed activity.

Feasibility Study Team

The personnel who perform a JFS.

Feasibility Study Director (FSD)

The person appointed as responsible for the conduct of the JFS.

Free Play

Activities of a player staff as it responds to stimuli provided by the control structure of a "game," where the stimuli are logical consequences of previous player actions. In this context, a game is some representation of the real world intended as context for training of the player staff.

General Officer Steering Committee (GOSC)

A group of General Officers from the Services interested in a particular JT&E issue or operational concept who are invited by the JTD to

advise on issues of doctrine, policy, or tactics. The intent is to capture and integrate Service representation in the JT&E at a senior officer level.

Instrumentation

Equipment used during a test activity to capture and record data.

Issue

A question that a nomination poses that a JT&E will resolve. The measures and data elements are designed to resolve the issues.

Joint Feasibility Study (JFS)

A formal study undertaken to determine whether a proposed JT&E should be chartered for execution by a Joint Test Force (JTF).

Joint Test Director (JTD)

The person appointed as responsible for executing a charted JT&E and directing the efforts of the JTF. Should be at least an 0-6 (possibly GS-15) with test and evaluation experience and a background in the technical aspects of the JT&E.

Joint Test and Evaluation (JT&E)

Those activities dedicated to addressing an issue or concept that was nominated by OSD, the Joint Staff, the CINCs, or the Services and has been chartered by OSD to be conducted by a JTF.

Joint Test and Evaluation (JT&E) Program

Those activities managed by DDT&E for the DoD, including all active and proposed JFSs and JTFs. Frequently confused with the actions of a JTF, which are to conduct a JT&E dealing with an issue or concept, the JT&E program includes all functions that support the JT&E such as the convening and support of the JT&E

Planning Committee, SAC, TAB, GOSC, and program and budget functions.

Joint Test Force

A formal organization lead by a JTD and staffed by the Services for a specific time period to conduct a JT&E under the auspices of an OSD charter.

Measure of Effectiveness (MOE)

A quantifiable entity that expresses the effectiveness of a system or concept under test. An MOE can also be defined as an algorithm that uses data to compute a quantity called the measure.

Mission Level Measure (MLM)

A quantitative or qualitative measure of a system's capabilities or characteristics in terms of their effect on the mission of which the system is a part.

Measure of Performance (MOP)

A quantitative or qualitative measure of a system's capabilities or characteristics.

Nomination

The process used to bring joint issues and concepts to the attention of the DDT&E.

Objectives

Organizational planning tools that focus attention on those areas will be tested to resolve the issues or concepts. JT&E progress can be measured in terms of attaining the test objectives.

Outline Test Plan (OTP)/Test Resource Plan (TRP)

Those resource requirements documents used by the Army and Air Force respectively for users to specify personnel and equipment requirements to be used in the support of joint test activities.

Piggyback

A form of testing where a joint test force uses deployed resources of one or more Services for testing before, during, or after a concurrently scheduled Service or Joint Staff training exercise in order to collect data.

Program Analysis Methodology

That portion of the APA that defines what analysis must be done using the collected data elements to address all of the issues.

Program Test Plan (PTP)

A document that specifies in detail the procedures for conducting test activities; collecting, processing, verifying, storing, and transporting the required data; and producing the required reports.

Quick-Look

Those procedures established to assure the JTD that the amount and quality of data being collected during test activities is adequate.

Reconstruction

A posttest analysis process used to verify the accuracy of collected data by alignment of the data to test activities.

Senior Advisory Council (SAC)

An advisory body that reviews selected nominations, the results of JFSs and JTFs, and recommends appropriate actions to the DDT&E.

Service Deputy

A person appointed by a participating Service to participate in a JTF. This person serves as a functional member of the JTF while representing the interest of the appointing Service. The Service Deputy should be an 05 or 06 with test and evaluation experience and a background in the technical aspects of the JT&E.

Technical Advisor

A JTF member designated by the JTD to advise on technical matters and to resolve technical differences of opinion within the JTF. The technical advisor is responsible for keeping JT&E activities focused on the chartered concepts and/or issues.

Technical Advisory Board (TAB)

A group of senior scientists, engineers, and analysts who advise the DDT&E, SAC, JT&E PC, FSDs, and JTDs on technical matters relevant to JT&Es.

Technical Advisory Group (TAG)

An advisory body formed to provide direct technical support and advice to a JTF. The TAG composition is similar to the TAB but is not as senior.

Test Activity

A collective term used to describe a series of related tests or studies conducted to collect and analyze data. Test activities can range from analysis using studies and models to field tests that involve deployed combat units.

Test Manager

A JTF member assigned by the JTD to be responsible for the planning, execution, and reporting of a specific test activity.

ANNEX C
POCs for JT&E SUPPORT

OSD   DDT&E
Tel - (703) 697-3406
FAX - (703) 614-7040
E-Mail LEDESMAR@ACQ.OSD.MIL

JT&E Coordinator
Tel - (703) 578-6581
Fax - (703) 578-6583
E-Mail BLOOMELE@ACQ.OSD.MIL

JCS   Joint Staff/J8
Tel - (703) 694-9759
FAX - (703) 694-6601

USAF   USAF/TEP
Tel - (703) 695-0900
FAX - (703) 695-0803
E-Mail BRECHWAJ@TEP.HQ.AF.MIL

AFOTEC/XRJ
DSN - 246-5339
Tel - (505) 846-5339
FAX - (505) 846-5214
E-Mail MAGEEW@P3.AFOTEC.AF.MIL

USA   DCSOPS (DAMO-FDR)
Tel - (703) 697-4044
FAX - (703) 614-2675
E-Mail AGOSTA@PENTEMH8.ARMY.MIL

OPTEC CSTE-OPM
Tel - (703) 681-6518
DSN - 289-6518
FAX - (703) 681-7584
E-Mail YOUNGA@OPTECI.ARMY.MIL

USN   OP 912D2
Tel - (703) 697-1485/0181
DSN - 227-1485/0181
FAX - (703) 697-1070

USMC   MCSYSCOM Code (TE)
Tel - (703) 784-5964
FAX - (703) 784-3432
E-Mail MEADP@MQG-SMTP3.USMC.MIL

DESA   DESA-BMC
Tel - (505) 262-4529
Fax- (505) 260-2759
E-Mail HOLMESB@DESA.OSD.MIL

ANNEX D
RELATED JT&E DOCUMENTS

DoD Instruction 5000.2

This DoD Instruction provides the basic framework for the Test and Evaluation of programs sponsored or supported by OSD.

DoD Manual 5000.3-M-4

This manual provides a description of the joint test and evaluation nomination and selection process, describes the organizational framework within each Service that supports the program and identifies principal participants and their respective responsibilities.

DoD Manual 7110.1-M1

This manual outlines the procedures for the distribution and use of OSD funds in support of OSD sponsored or supported projects.

DoD Manual 5220.22-M

This manual provides detailed information relative to the Government Information Security Program for safeguarding classified information.

DoD Directive 3200.11-D

This directive is a summary of Major Range and Test Facility capabilities.

DoD Directive 3200.12

This directive outlines the mission, responsibilities, and functions of the Defense Technical Information Center (DTIC). Copies of all JFS generated technical documents and readers should be forwarded to DTIC.

DoD Directive 4120.14

This directive establishes guidelines relative to Environmental Concerns for DoD programs.

DoD Directive 5230.24

This directive establishes the requirement for all managers of technical programs to assign distribution statements to technical documents generated within their program.

DoD Directive 6050.1

This directive is a list of activities that have previously been found to have no detrimental effects on the environment and do not require an EA or EIS.

DIA Regulation 55-3

This regulation is a guide for obtaining threat information support.

DoD Regulation 5200.1-R

This regulation establishes requirements relative to the government information security program.

Memorandum of Agreement on Multi-Service Test and Evaluation and Joint Test and Evaluation

This MOA provides the basic framework for T&E conducted by two or more Operational Test Agencies.

Joint Feasibility Study Handbook

This handbook consolidates OSD guidance and direction, information, references, and procedures on conducting a Joint Feasibility Study.

Joint Test and Evaluation Handbook

This handbook consolidates OSD guidance and direction, information, references, and

procedures on conducting a Joint Test and Evaluation.

AFOTEC Instruction 99-101

This Instruction provides the guidelines and procedures for the AFOTEC conduct of OT&E on Air Force systems. The instruction contains guidance relative to resource planning and funding of Joint Test and Evaluations.

AFOTEC Pamphlet 55-8

This pamphlet is a guide for resource managers and test managers on procedures for preparing the Test Resource Plan (TRP).

Army Regulation 15-38

This regulation provides guidance and establishes procedures governing the Test Schedule and Review Committee (TSARC).

Test Schedule and Review Committee Handbook

This handbook provides TSARC members and the user test community with a concise document that combines information from many sources for use in preparing Outline Test Plans (OTPs) for inclusion in the Department of Army Five Year Test Program (FYTP)

Marine Corps Order 5000.11B

This Order establishes guidance for the Test and Evaluation of systems and equipment to be employed by the Marine Corps.

Military Standard 1806

This standard provides procedures for marking scientific, technical, engineering, production, and logistics technical data, to denote the extent to which they are available for secondary distribution.

ANNEX E
TEST METHODS

A. INTRODUCTION

This annex describes the various test methods that a JT&E could employ, in effect the tools that are available to address the program issues. The list of methods is lengthy, but not exhaustive. There are two basic kinds of tools for accomplishing the JT&E efforts. The two basic methods are 1) *problem solving*, and 2) *testing* (e.g. assessments, evaluations, or validations). Some of the relative costs and benefits associated with each method are discussed in the following paragraphs and are summarized in **Figure E-1**. The advisability of using one or more of the methods will depend on specific test requirements and goals and on such factors as availability, credibility, cost, acceptance of test results by the Services, fidelity of the test data, test site location, and available support.

The JFS will make an initial determination of test methods as part of the PTD development. JTF coordination for the actual use of the resources to conduct the test activities may determine that some are not available when needed or some are too costly. If this occurs, the JTF must quickly decide on alternatives that could include the identification and use of other test methods.

B. PROBLEM SOLVING EFFORTS

Most JT&Es have at least one issue that calls for fixing a problem or finding a better way. Thus, the classic problem solving process is involved in almost all JT&Es. This includes bringing together people capable of solving the problem, brainstorming for solutions, analyzing and ranking solutions, and selecting the best solution. The magnitude of this effort can vary widely with the complexity of the problem.

A primary step in most problem solving activities is information collection. Reviews of published documentation is the most straightforward way of collecting data and there are many excellent sources available to the JTF. These include previous test and exercise results, industrial papers and studies, FFRDC studies and analyses, and Service programs in the same technical field. Operational records are another good source of information. A drawback to using operational data is that it may require manipulation of the data to reveal the information of interest and may lack the fidelity or accuracy needed.

New or supplemental information may be acquired through the use of surveys or expert opinion, or the use of *validated* models and simulations. This can increase the effectiveness of operation records by filling in those areas where operational records are weak. Validated modeling and simulations can also be used to develop new information by looking at existing data in new or different ways.

When research, modeling, or simulations do not provide the data needed, laboratory measurements may be required. With laboratory measurements, the resulting data are not compared (evaluated) against a set of criteria. Rather, the data are simply collected and reported.

SELECTION FACTORS / TEST VEHICLES TOOLS	POTENTIAL PAYOFF	DIFFICULT TO CONDUCT	COST	JTF CONTROL
LABORATORY TEST	1	1	1	1
MODELING & SIMULATION	2-3	2-3	2-4	2
MINI-TESTS	1	2	2	1
CPX	3	3	3	4
FIELD TEST (Piggyback)	2	4	2-3	3
FIELD TEST (Dedicated)	2	3	4	1

NOTE: Values are subjective estimates where 1 represents the most desirable condition

Figure E-1.   Nominal Value of Testing Options

C. ASSESSMENT, EVALUATION, OR VALIDATION

JT&Es are typically associated with activities to collect and analyze data to assess, evaluate, or validate a concept or resolve an operational issue. Frequently, JT&E team members who acquired their testing experience with a Service test organization tend to think of testing only in regards to new Service systems, i.e. hardware and software. In reality, this focus is too narrow. For example, the interoperability of two or more systems can be assessed; the effectiveness of an operational procedure can be evaluated; or, a new or revised process can be validated. JTF staff members must think in the broadest terms of testing and how test activities will contribute to the resolution of the JT&E issues.

An *assessment* provides an understanding of the relative magnitude of what is involved and determines the size and importance of that which is being examined in terms of a whole picture. An *evaluation* determines the relative worth or significance of that which is being evaluated (there are usually criteria which are used to aid in the evaluation process). A *validation* provides a means for corroborating or supporting something with a sound basis. Validation creates the foundation that ties the concept being validated to an authority on the subject.

The following sections discuss the various methods for obtaining data to support assessments, evaluations, or validations.

Surveys

The term *surveys* is used to cover a range of methods including questionnaire and interview methods to collect data about system performance. Frequently, survey data involves the use of experts but may also be used to elicit information from typical users of a system. Surveys are useful when evaluation criteria that are ill-defined, such as when gauging general *improvements* of a process or assessing the extent of a problem. Surveys are also useful when the feature under scrutiny does not lend itself to objective analysis, such as human factor concerns.

The cost for conducting surveys are typically much lower than assessment or evaluation methods. One factor that must be considered, however, is the cost of access to the survey participants. The fidelity of a survey is totally dependent on the quality and quantity of the responses from the survey participants.

Laboratory Tests

Laboratory tests are generally the least expensive and least complex type of tests to plan and execute. They are generally used to obtain engineering characteristics or specifications relative to the performance of specific systems under laboratory-controlled conditions. Such tests can range from the use of bench tests, to anechoic chambers, to antenna measurement facilities, and to system stress test facilities.

In addition to being perhaps the least expensive and simplest test to plan and conduct, lab tests provide the means to exercise the greatest control over the test and can be conducted at whatever pace is necessary to confirm and validate the data collected. Equipment can be left in the testconfiguration

until the data are validated, and if the test needs to be rerun, the equipment is already setup and ready for repeat testing. Nearly all of the testing conditions can be rigidly controlled to preclude outside interference on system operations and the data collection and management process. Testing can be conducted based on the availability and operating hours of the test facility. Resources for conducting the test, to include test equipment and support personnel, are generally available as part of the test facility support agreement. Costs for this type of testing will be those associated with the transportation of equipment and systems to and from the test location and the TDY costs of a test team from the JTF.

In most instances, lab testing alone is insufficient to resolve program issues, since the results generally do not reflect the system's performance in an operational environment (i.e., the system's performance within operational profiles and employed by operators of varying degrees of experience attempting to accomplish an operational task). However, lab testing can be a valuable tool for obtaining operating insights and data on a system prior to moving into a field test where the collection of data are more difficult. In this regard, the data obtained from lab tests will ordinarily be used later in the JT&E in conjunction with data from other types of testing to address the program issues and in designing other tests, to include mini-tests and field tests.

Modeling and Simulation

Models and simulations can vary significantly in size and complexity and can be useful tools in several respects. They can be used to conduct predictive analyses for developing plans for test activities, for assisting test planners in anticipating problem areas, and for comparison of predictions to collected data.

Validated models and simulations can also be used to examine test article and instrumentation configurations, scenario differences, conduct *what-if* tradeoffs and sensitivity analyses, and to extend test results.

One sequence that has proved useful begins with model use to predict test results. Tests are then used to validate these the model predictions, and finally, the validated model is used to extend the test results to cases not tested.

The JTF must pay particular attention to the maturity, community acceptance, and characteristics of models being considered. Model development is expensive. Similarly, a model that requires extensive modification or completion (most models can be improved) may be too expensive or time consuming for consideration.

A resource for the JTF to begin examination of potential models applicable to the JT&E is the *Joint Staff Catalog of Models, Simulations and Games.*

Mini-Tests

Mini-tests are small scale tests involving one-on-one or one-on-few systems conducted under operational or near-operational conditions. They are used to collect engineering data, system data, procedural data, or data on systems where personnel must be in the decision-making loop. Mini-tests are generally dedicated tests that afford complete control by the JTF. The costs of mini-tests can vary significantly. Generally, they are more expensive than lab tests but are cheaper than field tests. In some cases, combinations of lab tests and mini-tests can provide sufficient data to satisfy program level issues.

Mini-tests have been used by JT&Es to evaluate proposed instrumentation schemes, data collection and processing techniques, tools, and procedures for larger scale field tests. The use of mini-tests allows the team to evaluate and revise instrumentation, equipment and procedures, and train personnel to perform the required data collection tasks, thus reducing the risk of failure and the associated expense (time and dollars) during more expensive field testing.

As with costs, the planning efforts for a mini-test can vary. In most cases, the planning efforts are extensive since most mini-tests are conducted at Service test facilities and require integrating test facility resources, JT&E resources, and Service resources.

Command Post Exercises (CPXs)

CPXs are tests or exercises that are primarily procedure oriented and do not involve extensive deployment of forces. For example, resolving an issue of the targeting of air defense elements between ground elements and tactical air might be addressed during a CPX. Such a CPX would involve measurements of the time it takes for an assembled staff to receive guidance or orders, process targeting information, plan reactions, coordinate the planning and dispatch task orders. The JTF staff should evaluate potential CPXs against the data required to resolve test issues. CPX planning and execution should keep in mind that coordination activities usually occur within the play of a CPX, rather than before or more preferably after it. Therefore, the use of CPXs requires carefully planned data collection (by use of transparent instrumentation) procedures to assure that the required data are captured in a *free play* environment and that data collection does not interfere with the CPX.

Field Tests and Exercises

Field tests and exercises are generally large-scale activities conducted to obtain or validate data involving concept or system performance under near-operational conditions. They will range from one-on-one to many-on-many situations where data are required from many different systems interacting simultaneously under operational conditions. These situations may include man-in-the-loop decisions that impact system performance or the outcome of system interactions. Field tests and exercises are usually the most complex and expensive that a JT&E will conduct and, because of their size and expense, will require extensive planning and coordination.

The JTF should examine the Joint Staff Five Year Exercise Schedule and Service field test and exercise schedules to identify opportunities to use already scheduled field tests and exercises as test vehicles. Criteria for identifying field tests that could be used as test vehicles should include test schedule, scenario, location, forces (red and blue), systems, primary objectives, magnitude, and cost. Early coordination with Joint Staff and Service field test and exercise planners is essential to the development of a credible JT&E schedule.

There are two basic types of JT&E field tests, *piggybacked* and *dedicated. Piggybacking* refers to the method of collecting relevant JT&E data during already established Service or joint tests or exercises. This is distinct from a *dedicated* test, which would be a test designed and controlled by the JT&E for the sole purpose of answering the program issues. The costs and benefits of these two approaches must be weighed in relation to specific test goals and resources. Complete piggybacking may provide the lowest cost and data gathered under the most realistic operational conditions. However, the inability to control procedures and variables and the inability to iterate or repeat test events may obviate these apparent advantages.

In actuality, there is a more desireable compromise between these extremes. That is, conducting JT&E *testing in conjunction with a field test or exercise during a dedicated "window."* During this window, test resources are turned over to the control of the JT&E and test scenarios and variables may be modified to meet test objectives. This method has proven to be an excellent compromise between the higher costs of dedicated tests and the need to exercise adequate control. The JT&E may be able to offer the test or exercise sponsors an incentive for this arrangement by providing assets (manpower, equipment, and test results) that will benefit the exercise or lower overall costs.

If the JT&E only needs to participate during part of the test or exercise, or is going to implement testing during a dedicated window, then a decision will have to be made between the JTF and the sponsoring agency as to the best time to conduct the JT&E test activities. Piggybacking on the front of the exercise has the advantage of having fresher troops and the greater possibility of obtaining additional time if needed. However, training exercises may start with a great deal of confusion and equipment problems as well as less trained participants. Starting too late in the exercise runs the risk of tired or poorly motivated participants who are less than willing to stay late to obtain test data. Choosing a time near the middle of the test or exercise may be the best bet, sometime after things are expected to be running smoothly with enough time remaining for additional testing if required.

ANNEX F
DESA SUPPORT

A. INTRODUCTION

DDT&E is responsible for the overall management and oversight of the JT&E program. This handbook makes reference to capabilities that are available to support a JT&E. This annex provides an overview of the specific DESA capabilities that may be available. Support will be obtained through the OSD JT&E Coordinator.

B. SPECIFIC DESA RESPONSIBILITIES

- Coordinates disposition of JT&E resources/assets. Provides life-cycle management of OSD resources procured by/or used for JT&E programs.
- As requested by the JT&E, provides technical and administrative management services to JT&E activities, including financial management assistance, communications and computer management, contract management, and security and environmental consulting.
- As requested by DDT&E provides an Independent Evaluation of the technical and operational aspects of the JT&E test plan execution, data analysis, and reporting.

C. FUNCTIONAL SUPPORT CAPABILITIES

Although not inclusive, the following support capabilities can be made available. The JTD should contact the OSD JT&E Coordinator for more information relative to obtaining this support. If support is required, the JTD should initiate a Program Identification Document (PID) with DESA to formally establish the requirement.

Logistics Support

DESA is the custodian of DDT&E investments in facilities, threat assets, simulators, instrumentation, test equipment, data processing equipment, and other peripherals that have been purchased by OSD with JT&E funds. Some of these assets may be available for JT&E support. Logistics support capabilities may also include maintenance, storage, configuration management and control, warehousing, spares support, inventory control, transportation, calibration, O&M, equipment training, and expertise in logistics support.

Environmental Support

Support in this area can cover the spectrum from examination of the operational impacts of the testing to assistance in planning to ensure compliance with NEPA standards and requirements. This assistance can be particularly beneficial when conducting cost/benefit tradeoffs and identifying long lead items associated with Environmental Assessments (EAs) and Environmental Impact Statements (EISs). DESA maintains a listing of environmental directives and regulations and can provide assistance in recommending which should be reviewed for applicability. Additionally, DESA can assist in the identification of instrumentation that may be required for the environmental control of test activities.

Security Support

Personnel are available with experience in all aspects of security to include SSO, SCI, SSGs, OPSEC, and COMSEC. This support could include assistance in the development of procedures to guarantee the security of systems, equipment, plans, operations, data, and reports; obtaining special security billets and clearances for personnel; the use of SCIF capabilities; the development of Security Classification Guides; the establishment of interfaces with compartmented projects; and periodic reviews of security procedures.

Contracting and Procurement Support

The DESA Director is head of a DoD warranted contracting activity and the expertise associated with this service is available to the JTF. This includes the development and administration of contracts to support JT&E activities, the identification of unique resource requirements, and the correlation of support requirements with responsible agencies.

DESA has existing contracts with defense contractors who have extensive JT&E experience. These contracts are available for use by a JTF and a subtask can be developed quickly to obtain the required support. If contracting support is required, the JTD should appoint a Contracting Officers Technical Representative (COTR) from the JTF staff who will be responsible for providing technical guidance to the contractor and technical inputs relative to contractor performance to the Contracting Officer representative. In addition to providing information and access to contractors with JT&E experience, DESA can provide COTR training for JTF personnel.

Technical Support

DESA can provide ad hoc technical support that includes commenting on or contributing to the development of test plans, data management and analysis plans, and any of the required annexes. DESA personnel have backgrounds in T&E and work with and support on-going JFS and JTF efforts. Defense contractors under contract to DESA have personnel with JT&E experience, to include past JTF Directors, Service Deputies, Chiefs of Staff, Directors of Operations, and Directors of Operations Analysis. Technical support is available in the following areas:

- Program level guidance, assistance, and advice in the development of JT&E plans and documentation.
- Reviews of concepts and plans developed by the JTF.
- Analysis, engineering, and T&E expertise.
- Information and advice on databases and models.
- Information and advice on range equipment, test ranges, and facilities.
- Information and advice on the use of threat systems.
- Information and advice on test instrumentation systems and communications capabilities, costs, and availability.

Personnel Support

DESA cannot themselves provide personnel on a permanent or extended basis to a JT&E. However, technical assistance can be made available on an occasional basis. Additionally, DESA can assist the JTF in developing and

coordinating manpower requirements with the Services and the Civil Service. They can also assist in providing contractual support from their pool of Government contractors.

Accounting and Finance Support

Accounting and finance expertise is available and can be provided. DESA personnel are familiar with the accounting and finance procedures and peculiarities of all the Services and can be helpful to the JTF in establishing liaisons with the respective Service finance centers. DESA can also provide advice on Service procedures and periodic reviews of JTF fiscal situations and reports to assure their accuracy. However, dedicated DESA finance and accounting personnel are not available to any individual JT&E.

ANNEX G
TEST RANGES AND FACILITIES

A. INTRODUCTION

The JT&E program schedule developed by the JFS was based on early coordination with OSD, Joint Staff, and the Services relative to the use of test ranges or facilities. The JTF must formalize the requirement for use of these ranges/facilities with the range/facility managers. The coordination for actual use of a test range or facility should be in the form of a Program Introduction Document (PID). Although range and facility use was included in the Consolidated Resource Estimate (CRE), the range/facility manager will take no action on this requirement until a PID is received. PIDs are completed using the instructions in *Universal Documentation System (UDS) Document 501-79* and the supporting agency instructions. The range/facility manager will provide the JTF with a *statement of capability* as acceptance of responsibilities as outlined in the PID.

The PID should be based on a comprehensive survey of the test range or facility by a JTF survey team. The survey data and information will form the basis for detailed test planning and decision making. The survey team should focus on technical, operational, and logistic considerations required for the support necessary to execute the planned test activity. Circumstances may be encountered that require follow-on visits to evaluate potential problem areas. The survey team should take the necessary time to do the job right.

The survey team should review the current versions of the following documents prior to beginning the survey:

- *DoD Directive 3200.11-D Major Range and Test Facility Base Summary of Capabilities.*
- *Report on Range Utilization and Improvement Plans.*
- *USAF Armament Division Technical Facilities Manual, Volumes I, II, and III.*
- *US Army Test Facilities Register, Volumes I and II.*
- *Test and Range Facilities Catalog – Naval Sea Systems Command*
- *Naval Test Facilities Data Base (Technet)*

The survey should acquire data and information on the following capabilities and should conclude with well documented recommendations on which planners and managers can make decisions.

B. TEST RANGE OR FACILITY

1. Describe the range or facility in detail. Provide the geographical location, topography, noncontiguous aspects, and climatic conditions associated with the range or facility.

2. Provide the size and dimensions of the range or facility and identify any restricted land or air space usage requirements. Include maps and technical documentation when appropriate.

3. Address the range or facility operating schedule and availability, EMI/EMC, and proximity of the area to military and commercial flight patterns.

4. Address the availability of floor space in existing structures that can be used by JTF personnel.

5. Identify the range or facility management hierarchy and directives for management, conduct, and support of test activities.

C. LOGISTICS

1. Address range or facility accessibility.

   - Air- Identify and determine the location of military and commercial airfields servicing the range or facility.
   - Roads- Identify intra-range and facility roads to commercial transportation facilities.
   - Water- Identify port or access waterways, distances to the range or facility, restrictions to use, and suitability for test activity use.

2. Identify the nearest military establishment that can provide logistic support. Identify POCs and determine the administrative vehicle to acquire support and obtain information on the availability of the following:

   - Billets for officers, enlisted, and contractors.
   - Base Exchange.
   - Clothing Sales.
   - Commissary.
   - Concessions (barber shop, laundry, movies, etc.).
   - Dining facilities.
   - Medical services.
   - POL (to include delivery to test sites).
   - Reference library (technical).
   - Religious services.
   - Secure storage.

- Supply support.
- Transportation (passenger and freight).
- Security (guard service).

D. CIVIL ENGINEERING

1. Determine the level of support that civil engineers are able to provide and the response times associated with the support.

2. Determine the type of electrical service that is available at test sites to include:

   - Prime power or generator power.
   - Capacity of power plant to include voltage, frequency, and phasing. Determine size of power plant and availability of spare service.
   - Determine if back up power is available and wheather it is manual or automatic start up.
   - Determine if grounding and lightning protection is available for range or facility systems.

E. SECURITY

Determine the existence of range or facility security plans and check the following:

- Area security provisions and assigned priorities for their protection.
- Control measures and established restrictions to access and movement into critical areas (personnel, vehicles, and materials).
- Determine the availability of aids to security, such as protective barriers, signs, gates, protective lighting systems, communications, and security forces.
- Determine if contingency plans are responsive to emergency situations.

- Determine the requirements for passing clearance data on personnel for range or facility access.

F. SAFETY

Establish contact with the range or facility safety officer and obtain copies of safety directives, brochures, POCs, and key telephone numbers. Also obtain information on the following:

- Range or facility speed limits.
- Use of rental cars.
- Identify the meanings of different colored warning lights.
- Identify precautions required at test sites.
- Identify the criteria for evacuation of range or facilities.
- Determine the locations of first aid stations.
- Identify restricted or hazardous operations areas.
- Identify the methods of notification for range or facility closure.

G. RANGE OR FACILITY SYSTEMS AND EQUIPMENT

Range and facility systems and equipment are normally identified in master planning documents. The JTF survey team should obtain copies of these documents, if possible. If not, collect the data listed in the following paragraphs. Identify the equipment or systems, determine the quantity on hand, and obtain their authorized frequencies, operational locations, and geographical coordinates. Some of the frequencies may be classified.

- Communications. Determine if the required frequencies are authorized.

- Targets. Determine locations, multi-spectral signatures, and restrictions to use.
- Range or Facility Instrumentation. Identify the data source mechanization, the end product, and fidelity of the data source. Determine the data formats and elements for each source product. Determine if the systems are certified prior to the start of missions and if system modifications are controlled.
    (1) Scoring Systems.
    (2) Acquisition Systems.
    (3) Threat Systems.

H. RANGE OR FACILITY SUPPORT SYSTEMS

1. Range Timing System.

- Identify the time source, code format and timing technique used.
- Determine if system is available to all test sites.
- Determine compatibility with instrumentation requirements.
- Determine availability of backup sources.
- Determine time-synch capabilities.

2. Integrated Air Defense Systems.

- Determine what systems are available.
- Determine if systems can function in automatic, semi-automatic, and manual modes.
- Determine system hardware configurations.

3. Intra-base Radios.

- Determine nets that are available and their respective functions.

- Determine types of equipment and authorized frequencies.
- Determine the availability of radios for white communications.

4. Range or Facility Calibration Systems.

- Define system configuration/ network.
- Determine if systems are integrated with timing system.
- Determine if calibration models and databases of historical information are available.

5. Automatic Data Processing.

- Define the computer and the associated data collection systems.
- Describe the computer hardware interface with the data sources.
- Determine if results of test are available on a near-real-time basis.
- Identify and obtain copies of computer products.

I. DATA DISPLAY SYSTEMS

1. Identify the type, location, and function of data display systems.

2. Identify computer programs in the system, and the interfaces that accept and feed the raw data to the computer.

3. Determine if the data display system is on a near-real-time basis. Determine if the data display system has the capability to produce hard copies of the displayed data.

J. FINANCIAL

Identify the point of contact and the established procedures for reimbursement of costs associated with the use of the range or facility and options for cost sharing that might be required.

K. SUMMARY

Provide an overall assessment of the range or facility, the anticipated support, and details that might contribute to test planning and execution.

L. RECOMMENDATIONS

Be specific. If the survey team discovers problems that could impact test execution, the report should so state. The report should also document the findings and identify the specific limitations that use of the range or facility would have on test execution.

ANNEX H
TEST PROGRAM COST/BUDGET MATRIX

Joint Feasibility Studies (JFS) are required to develop a Consolidated Resource Estimate (CRE) and a by-year budget request if recommending the chartering of a Joint Test and Evaluation (JT&E). The attached **test program cost/budget matrix** illustrates how these resource requirements can be translated into funding requirements. The matrix attempts to capture the primary JTF activities that have associated costs and the methods that could be used to estimate the dollars required to support these particular activities. Once the costs of individual items have been determined, they are aggregated and projected into a yearly budget estimate. This matrix is generic in nature and will need to be adjusted to fit the specific requirements of each JT&E. Some JT&Es will have unique testing/activity requirements not reflected by the topics in the matrix while others will have no need for some of the topics listed.

In general, things to consider in filling out the matrix for a particular JT&E include:

- Aircraft/ships/platforms by type/sorties.
- Weapon(s) by type.
- Communication equipment by type and mission (operational and test support).
- Target(s).
- Characterization requirements.
- Instrumentation (beacon, pod, TSPI, GPS, TACTS, ACMI, GRDCUS, VTR, War Wagons, etc.).
- Meteorological requirements.
- Modeling/simulations.
- Data sources/devices (9 track, floppy disks, Bernoulli, bar code labels, etc.).
- Data collectors (government, civilian, military, contractors).
- Operational equipment.
- Test unique equipment (items consumed during testing or are no longer of value after the JT&E is complete).

PRIMARY ACTIVITIES	COST CATEGORY	METHOD/EXAMPLE
DIRECT TEST COSTS		
TEST PREPARATION Note: Preparation costs must be prepared for each test site/event.	Environmental Impact	
	Safety Plan	
	Train/Coordinate Test Instrumentation Operators	- number of operators - travel to training site - per diem during travel and TDY - rental cars
	Test Communication Network	- packaging and shipping - communication network setup - travel to test site - per diem during travel and TDY - rental cars
TEST ASSETS	Test Specific Materials Note: These are materials prepared for each test site/event and be will be unique for each JTF. Examples are from JCCD.	- smoke generators - remote controls - woodland, snow, desert camouflage screens/supports - runway false operating surface - decoy buildings and piers - radar corner reflectors - photo image canvas - expendables (e.g. fog oil, tonedown paint, RAM/IR coatings, packaging & shipping costs)
	Instrumentation	- rental/lease of instruments - calibration costs - packaging and shipping - operator costs if not included elsewhere (e.g. pay & allowances, travel, per diem, rental car)
	Projected TDY Costs	- transportation/travel (for each site/person to/from each home station) - per diem (per person per day for number of days) - rental car cost (number of cars, projected days, average cost per day)
	Test-Related Contract Support	- JTF on-site support - test site/event support

PRIMARY ACTIVITIES	COST CATEGORY	METHOD/EXAMPLE
TEST ASSETS (cont.)	Range Costs	- range-owned instrumentation - range control/data processing - range communication costs - range utilization - range safety/fire/medical emergency crew
	Pretest Modeling Costs	- development of input parameters and characteristics to run the model - model modification cost - projected cost to perform modeling
	Dry Runs	- execution of unique trials
row: **TEST DATA PROCESSING COSTS**		
DATA COMPILATION Note: Prepared for each test site/activity. It includes the physical handling of the data, input, documenting calibration procedures and instrumentation characteristics, obtaining data samples, etc.).	Manpower Required (man days/months)	- targets - participants (e.g. aircraft, tanks, ships, etc.) - meteorological
	Test Range Data Retrieval Reduction	
DATA REDUCTION AND RE-COMPILATION Note: Prepared for each test site/event. It includes data reduction and re-compilation processing of data, checking range to target data, validating calibrations, assimilating data from similar instruments at different sites/events	Manpower Required (man days/months)	- per instrumentation requirement
DATA ANALYSIS Note: Prepared for each test site/activity.	Manpower Required (man days/months)	- per instrumentation or test/activity requirement
DATA COMPARISON Note: Multi-treatment/cross-platform comparisons	Manpower Required (man days/months)	

PRIMARY ACTIVITIES	COST CATEGORY	METHOD/EXAMPLE
DATA ARCHIVE PREPARATION Note: Prepared for each test site/activity.	Manpower Required (man days/months)	
COMPARE/ANALYZE PREDICTED TO ACTUAL TEST RESULTS	Manpower Required (man days/months)	
ANALYZE COMPARATIVE TEST RESULTS Note: Multi-tests/activities.	Manpower Required (man days/months)	
TEST-UNIQUE COMPUTER HARDWARE/SOFTWARE COSTS		
TEST-UNIQUE COMPUTER HARDWARE	Workstations	- type(s) of station - cost/numbers
	High Resolution Window Terminals	- type(s) of terminals - cost/numbers
	Portable Computer Hardware	- type(s) of computers - cost/numbers
	Server	- type(s) of server - cost/numbers
TEST-UNIQUE STORAGE DEVICES	Tape Drives	- type(s) of tape drives - cost/numbers
	Disk Drives	- type(s) of disk drives - cost/numbers
TEST-UNIQUE OTHER HARDWARE	Laser Printers	- type(s) of laser printers - cost/numbers
	Color Printers	- type(s) of color printers - cost/numbers
	Dot Matrix Printers	- type(s) of dot matrix printers - cost/number
	Other Printers	- type(s) of other printers - cost/number
TEST-UNIQUE COMPUTER MAINTENANCE	Network/Hardware Management	- manpower required (man months)
	Hardware Maintenance	
TEST-UNIQUE COMMERCIAL SOFTWARE	Licensed Commercial Software	- type of software - cost/numbers of copies

PRIMARY ACTIVITIES	COST CATEGORY	METHOD/EXAMPLE
DATABASE-RELATED COMPUTER HARDWARE/SOFTWARE COSTS		
DATABASE-RELATED COMPUTER HARDWARE	Workstations	- type of workstations - cost/number of workstations
	Computer Terminals	- type of terminals - cost/number of terminals
	Server(s)	- type of servers - cost/number of servers
DATABASE-RELATED STORAGE DEVICES	Tape Drive(s)	- type of tape drives - cost/number of tape drives
	Optical Disk(s)	- type of optical disks - cost/number of optical disks
	Disk Drive(s)	- type of disk drives - cost/number of disk drives
DATABASE-RELATED OTHER HARDWARE	Laser Printers	- type(s) of laser printers - cost/number of laser printers
	Color Printers	- type(s) of color printers - cost/number of color printers
	Dot Matrix Printers	- type(s) of dot matrix printers - cost/number of dot matrix printers
DATABASE-RELATED MAINTENANCE	Hardware Maintenance	
DATABASE-RELATED SOFTWARE	Licensed Software	- type of software - cost/number of copies
	Purchased Software	- type of software - cost/number of copies
	Developed Software	- type of software - projected cost/manpower
	Other Software	
OTHER CONTRACT SUPPORT COSTS		
TEST DESIGN SUPPORT	Manpower	- cost per man day/month/year
TEST PLANNING SUPPORT	Manpower	- cost per man day/month/year
REPORT PREPARATION	Manpower	- cost per man day/month/year
DEVELOP/REFINE MODEL CALIBRATION TOOLS	Manpower	- cost per man day/month/year

OTHER COSTS		
NON-TEST EVENT RELATED TRAVEL	Conferences/Technical Interchanges	- number of trips - average cost (average length, max. per diem, rental car, average transportation cost)
	Administrative Travel (IPR, TAB, GOSC, etc.)	- number of trips - average cost (average length, max. per diem, rental car, average transportation cost)
LEAD AND PARTICIPATING SERVICE COSTS (NON-OSD)		
	Civilian Pay	
	Office Facilities	
	Vehicle Rental	
	TDY and Per Diem (non-JTF)	
	Base Support (ISSA)	
	Platforms and Equipment	- Flying Hours - POL - Munitions
	Furniture	
	Non-test Specific Supplies and Equipment	

ANNEX I
ENVIRONMENTAL CONCERNS

A. INTRODUCTION

JTF planning must consider the environmental effects of test activities in the development of test plans and procedures. Failure to consider environmental compliance requirements could result in negative consequences to include test activity cancellation or unacceptable schedule delays in execution of the JT&E. Avoiding these consequences requires that the JTD understand and develop an appreciation of the National Environmental Policy Act (NEPA) and associated DoD Directives.

It is important when planning JT&E test activities to remember that DoD is the Federal leader in agency environmental compliance and protection. There are more than 40 Federal environmental statutes that could affect contemplated JT&E test activities. State and local environmental laws are derived from these Federal regulations and are usually more restrictive.

This annex provides information on environmental issues and procedures that might apply to the JT&E. If test activities under consideration are to be conducted on an established DoD facility or major range test facility, coordination with local environmental personnel and compliance with established local procedures should be adequate.

Most military or Government test facilities have their own environmental departments that have completed many environment impact studies and subsequent statements based on previous test activities. These environmental impact statements can be used provided the proposed JT&E test activity has similar assets and scenarios of past test activities.

If the JT&E is considering test activities on non-DoD lands or test activities that will require the transport of equipment or materials over public transportation systems, the JTD must become familiar with and consider the possible impact of environmental directives and regulations for the areas of interest. These directives and regulations can be obtained by contacting the Environmental Protection Agency (EPA) Regional Offices. The EPA can also provide assistance relative to state and local regulations for the area of interest.

When requested, DESA can provide help to the JTD to ensure that environmental issues are properly considered. Specific help includes legal counseling, access to environmental planning tools, databases, and expertise and advice on obtaining special instrumentation that might be required to monitor environmental compliance.

B. TEST ACTIVITY CONSIDERATIONS

The environmental challenge for the JTD is the identification of proposed test activity actions that might produce adverse biological, ecological, or socioeconomic effects. Some test activities will have no impact on these areas. In others, the projected impact might range from some to severe. In any case, the planned test activities must comply with environmental laws and

regulations. Two basic tenants of these laws and regulations are:

- Test activity procedures must ensure that environmental information is available to decision makers and citizens.
- Test activity plans must consider reasonable alternatives to avoid or minimize adverse environmental effects.

Environmental regulations are classified as either procedural or substantive. The NEPA requires all Federal agencies to consider environmental impacts during the decision making process regarding proposed test activities. Depending on whether a proposed test activity could significantly affect the environment, one of three levels of analysis is required (1) Categorical Exclusions (CATEX), (2) Environmental Assessments (EA), and (3) Environmental Impact Statements (EIS).

Categorical Exclusions

Categorical Exclusions are those test activities that do not have a significant individual or cumulative effect on the environment or have previously been found to have no such effect. Categorical Exclusion activities are listed in *DoD Directive 6050.1* and they do not require an EA or EIS.

Environmental Assessments

An EA is an analysis of the potential environmental impact of a proposed test activity. An EA may be required when the JTD can not determine beforehand whether the test activity under consideration will affect the environment or will be controversial with respect to environmental effects. If required, the EA will either conclude that the test activity will not significantly effect the environment, thus resulting in the preparation of a Finding of No Significant Impact (FONSI) or will conclude that the test activity could have a significant impact.

Environmental Impact Statements

The JTF must identify test activities that could involve potential environmental impacts. The environmental impact of proposed test activities must be considered in the selection of the test method for conducting the planned activities at specific locations. If environmental impact is anticipated and there is no alternative test method, the JTF may be required to conduct an EIS. The following are characteristics of an EIS.

- An EIS is a formal consideration of environmental consequences. It addresses the nature of the test activity and its potential impact on the environment. The EIS must address all measures that will be taken to minimize these impacts and alternatives to the proposed test activity, to include the consequences of not doing the entire test.
- An EIS is both complex and lengthy.
- The length and cost of an EIS can be extensive and may require several man-years of specialized analytical effort to complete. Thus the requirement for the identification of a potential EIS requirement for proposed JT&E test activities cannot be overemphasized.
- It is possible to have an EIS prepared by a contractor.

C. ENVIRONMENTAL IMPACT CONSIDERATIONS

The JTF should as a minimum include the following in their consideration of environmental impacts:

- Determine test activity scenario, location, assets, environmental concerns, and considerations.
- Determine if test facility has environmental impact statements that would be applicable to the proposed test activity. The test facility managers will know what requirements are fulfilled or need further study.
- Determine what environmental impact actions are ongoing.
- If environmental actions will be required, estimate associated cost, and time to accomplish.
- Consider other test activity options.

D. TEST AND EVALUATION ISSUES

The following is a list of some test and evaluation issues that need to be considered by the JTF:

- Weapon Firing (noise and air emissions).
- System maintenance (waste solvents and oils).
- Vehicle operation (noise, terrain impacts, and air emissions).
- Contamination of land resources and unexplored ordinance.
- Accidents involving hazardous materials.
- Test site cleanup.
- Land use management.
- Wildlife protection.
- Archaeological and historical resources.

E. PUBLIC INVOLVEMENT

Public participation in preparing EAs and EISs is a reality that the JTF will have to consider. Should a test activity involve the potential for environmental impact, the JTD should establish appropriate communications with local authorities and interested parties. In determining the extent to which public participation could be required, the JTD should consider the following factors:

- The magnitude of the environmental considerations associated with the proposed test activity.
- The extent of anticipated public interest.
- Relevant questions of national security and classification.

F. CLASSIFIED TEST ACTIVITIES

Classified test activities must comply with the same environmental laws, regulations and directives as unclassified tests. EISs and EAs will have to be prepared, safeguarded, and disseminated according to the requirements applicable to the classified information. When feasible, the documents should be organized so that classified portions are included as appendices, and the unclassified portions may be made available to the public.

A classified EA/EIS serves the same informed decision making purpose as the unclassified versions. Even though the classified EA/EIS does not undergo full public review and comment, it will be part of the information package for each JT&E activity. The content of a classified EA/EIS must, therefore, meet the same content requirements that are applicable to a published unclassified version.

G. JTF FOREIGN TEST ACTIVI-TIES

The environmental situation of a joint test conducted outside the territories of the United States will depend on the requirements and standards set by the host nation and Status of Forces Agreement (SOFA). Thus, if a test activity is considered at a non-U.S. location, the JTD must be familiar with the specific regulations that apply to testing in the host country and the specific locale within that country. All U.S. facilities located outside the territories of the United States are required to conduct their test activities in an environmentally safe manner and in compliance with both host country and U.S. regulations relating to environmental, natural resource protection, and occupational health and safety. The two major U.S. directives that apply to or specifically address testing issues are:

- *DoD Directive 4120.14.*
- *EO 12114: Environmental Effects Abroad of Major Federal Actions.*

ANNEX J
SECURITY CLASSIFICATION GUIDE

If the JT&E involves the development of classified material, the JTD should consider the requirement to develop a Security Classification Guide (SCG). The following is an example of an SCG format developed by a recent JTF that could be tailored to the specific requirements of a JT&E.

A. COVER

Title:

Issued By:

Approved By:

Date:

Action Officer:

Distribution Notice: This document covers the operational use of military systems and hardware. Distribution restricted to DoD and DoD contractors. Further dissemination only as directed by JXXX/JTD, XX Road, Any Town, USA.

B. SECTION I

GENERAL INSTRUCTIONS

1. **PURPOSE.** To provide instructions and guidance on the classification of information developed by the JXXX/JTF.

2. AUTHORITY

a. This guide is issued under the provisions of Executive Order 12356; DoD 5200.1R, Information Security Program Regulation; DoD 5220.22M; and DoD 5220.22R.

b. This guide constitutes the authority for, and may be cited as the basis for classification, regrading, or declassification of information and material originated by the JXXX/JTF.

3. OFFICE OF PRIMARY RESPONSIBILITY (OPR).

All inquiries concerning the content and interpretation of this guide should be addressed to JXXX/JTD, XX Road, Any Town, USA XXXXX-XXXX.

4. CLASSIFICATION RECOMMENDATIONS.

Recommended changes will be completely documented and justified. Recommendations should be made through appropriate channels to the OPR. Pending final decision, contested classified information shall be handled and protected at the higher classification. All users are encouraged to assist in improving and maintaining the currency and adequacy of this guide.

Because of interface relationships of program material, unclassified items of information may become classified or sensitive when combined into a single document. Therefore, care must be taken prior to the release of any related information, even though it is unclassified. Further, the release of information should be based upon the recipient's strict need-to-know.

5. APPLICATION, REPRODUCTION, AND DISSEMINATION.

This guide is intended specifically for the use and guidance of individuals with a need-to-know requirement for information contained herein. Reproduction and dissemination will be at the discretion of the OPR.

6. PUBLIC RELEASE.

The fact that certain information is shown to be unclassified does not authorize public release. Public release of unclassified information must be approved by the JTD.

7. FOREIGN DISCLOSURE.

Release of program information or hardware/software is not authorized to any foreign entity or foreign national without prior approval by the JXXX/JTD. All proposed releases of program information to any foreign government shall be forwarded to the OPR for review and further processing action.

8. PROGRAM DEFINITIONS.

The following is a list of abbreviations and designations used throughout this guide:

    a. C   Confidential Classification Level
    b. COMSEC Communications Security
    c. DoD   Department of Defense

d.	FOUO	For Official Use Only
e.	FSD	Feasibility Study Director
f.	JXXX	Joint XXX Feasibility Study
g.	JFS	Joint Feasibility Study
h.	JTD	Joint Test Director
i.	JTF	Joint Test Force
j.	JT&E	Joint Test & Evaluation
k.	MACOM	Major Command
l.	NOFORN	Not Releasable to Foreign Nationals
m.	OADR	Originating Agency Determination Required
n.	OPR	Office Of Primary Responsibility
o.	OPSEC	Operations Security
p.	R&D	Research and Development
q.	RCS	Radar Cross Section
r.	RDT&E	Research, Development, Test & Evaluation
s.	S	Secret Classification Level
t.	SAM	Surface-to-Air Missiles
u.	SCG	Security Classification Guide
v.	T&E	Test And Evaluation
w.	TS	Top Secret Classification Level
x.	TSPI	Time Space Positioning Information
y.	U	Unclassified
z.	WNINTEL	Warning Sensitive Intelligence Sources and Methods Involved

C. SECTION II

OVERALL EFFORT

9. GOALS, MISSION, & PURPOSE. To provide instructions and guidance for the security classification of information and material originated by the JXXX/JTF.

a. The purpose of the JXXX/JT&E is to resolve the program issues (as appropriate).

b. The JXXX/JTF Security Classification Guide (SCG) is designed to protect information related to (e.g., U.S. missiles, manned aircraft systems, sensor performance and vulnerabilities, intelligence assets, tactics and weapons employment, CCD, etc.), data collected or derived from other sources for JXXX use and various other aspects of the test procedures.

10. END ITEM. The end items of this effort include a JT&E final report.

The JT&E final report will normally be unclassified unless the subject matter is otherwise classified or so designated by the authority or agency supplying the proposed equipment and/or techniques to be tested. Test data and results that indicate a capability, vulnerability,

weaknesses or that would compromise system survivability will be classified Secret. Actual use of equipment or concepts to be tested during test activities, will be classified in accordance with the guidance of the JTD or facility commander.

Source classification guidance must be consulted when information and hardware that is classified by other agencies are utilized. The following subparagraphs contain detailed classification guidance.

TOPIC	CLASS	DECLASS	COMMENT
11. GENERAL:			
a. Information revealing the existence of general (XXX) policy, doctrine, tactics, material, techniques, and training program	U		
b. Acknowledgment that new (XXX) capabilities are continually being developed	U		
c. The identity of organizational (XXX) planners	U		Protect as FOUO
d. Information that reveals there is a policy of employing peacetime (XXX) to support security operations	U		Note 2
e. Information that reveals there is a policy of employing (XXX) to enhance defense of forces and/or support/conduct combat operations	U		Protect as FOUO
f. Information that reveals a policy concerning the planning and conduct of combined (XXX) operations and exercises	U		Notes 2 & 3

g.	Generic tactics and techniques such as feints, diversions, ruses, demonstrations, displays, electronic deceptions, and communications	U		
h.	Effectiveness of actual tactics or techniques, if known, that are not influenced by foreign knowledge	U		
i.	Actual tactics or techniques that, if known, would aid an adversary in the detection of tactical (XXX) activity or facilitate development of countermeasures	S	OADR	Note 3
j.	Actual tactics or techniques that, if disclosed, might reveal intelligence sources or collection capabilities	See Comments		Notes 4 & 9
k.	Information detailing the comprehensive capabilities and goals (current and projected) of a Service, MACOM, base or unit	S	OADR	
l.	Information identifying vulnerabilities or deficiencies in tactical (XXX) operational plans, conceptual plans, operations, capabilities, tactics, training or equipment that would negate their effect if known	S	OADR	Note 3

m. Information revealing the actual employment of (XXX) equipment and techniques when knowledge of the information would aid threat planning to negate, nullify or counter the use of the means; or, when the existence of a classified capability would be revealed	S	OADR	Note 3

12. (XXX) EQUIPMENT AND TECHNIQUES

a. Permanent (XXX) equipment/techniques used and/or employed	U		Note 2
b. Plans for specific use of (XXX) that are deployed only during certain stages of alert or actual combat	S	OADR	
c. Instructions revealing how to use (XXX) equipment and techniques (unclassified unless otherwise noted)	U		

13. TEST DATA:

a. Test plans, methodology, test data, or results that do not reveal specific vulnerabilities, capabilities, or weaknesses	U		
b. Test plans, methodology, test data, or results that reveal specific vulnerabilities, capabilities, or weaknesses	S	OADR	
c. Test philosophy & objectives			
• If capabilities, vulnerabilities, or limitations are revealed	S	OADR	

• If capabilities, vulnerabilities, or limitations are not revealed	U		
d. Test results			
• If capabilities, vulnerabilities, or limitations are revealed	S	OADR	
• If capabilities, vulnerabilities, or limitations are not revealed	U		
e. Actual test dates	U		Protect as FOUO
f. Overall test schedule	U		Protect as FOUO
g. Location of test sites	U		

14. DATA ACQUISITION, REDUCTION, AND PRESENTATION:

a. Mathematical algorithms or computer software routines that are used to reduce, analyze, or present data	U		Note 6 (Information may be protected as proprietary)
b. Mathematical algorithms or computer software routines that are used to evaluate (XXX) equipment or techniques effectiveness	U		Note 6 (Information may be protected as proprietary)

c. Remotely sensed signatures, measurements, reports, papers, software, synthetic or enhanced imagery, drawings, etc., that provide research and development results, conclusions, or recommendations that reveal an enhancement or vulnerability that could compromise the survivability or operability of a high-value asset target, facility or installation	S	OADR	Notes 7 & 8
d. Specific conclusions and recommendations regarding (XXX) test and evaluation drawn from raw or tabulated data as described in (c) and processed data as previously described if they reveal vulnerabilities or impact on survivability	S	OADR	
e. Reports resulting from use of classified data and/or analysis, conclusions, and recommendations	See Comments		Note 11
f. Compiled database (in any form) of test results when capabilities, vulnerabilities, limitations, or weaknesses are revealed	S	OADR	Notes 6 & 8
g. Compiled database (in any form) of test results when capabilities, vulnerabilities, limitations, or weaknesses are not revealed	See Comments		Note 8/Protect as FOUO

D. SECTION III

PERFORMANCE AND CAPABILITIES

TOPIC	CLASS	DECLASS	COMMENT
15. TEST & EVALUATION			
a. Information related to the performance and/or capabilities of specific (XXX) equipment or techniques	S	OADR	
b. Information related to countermeasures that would affect the performance and/or capabilities of (XXX) equipment or techniques	S	OADR	Note 3
c. Information regarding current or projected performance and/or capabilities of (XXX) equipment or techniques	S	OADR	
d. Design, performance and/or functional characteristics of operational (XXX) equipment	See Comments		Note 9
e. Test procedures information			
• If operational employment tactics, capabilities, or limitations are revealed	S	OADR	Note 9
• If operational employment tactics, capabilities, or limitations are not revealed	U		

16. DATA REDUCTION & PRESENTATION:

a. Test data and reports that disclose (XXX) performance — See Comments — Note 9

b. Test data and reports that do not disclose (XXX) performance — U

c. Test data analysis, results and conclusions

   • If capabilities, limitations, or vulnerabilities of a system are revealed — S — OADR — Note 3

   • If capabilities, limitations, or vulnerabilities of a system are not revealed — U

d. Flight test data/encryption codes — See Comments — Notes 4 & 9

e. Raw or tabulated data resulting from tests, such as uncaptioned photographs, thermographs, temperature measurements, radar cross-section measurements, etc. — U — Notes 7 & 9 (Protect as FOUO)

f. Processed data from tests, such as captioned photographs or thermographs, tabulated temperature measurements, RCS measurements, etc. — S — OADR — Notes 4 & 10

g. Mission tapes obtained from test aircraft — See Comments — Note 9 (See Sec. 20 a & b)

h. Raw test data tapes and logs generated by JXXX

• If results are revealed which indicate capabilities, vulnerabilities, or weaknesses	S	OADR	
• If results are not revealed which indicate capabilities, vulnerabilities, or weaknesses	U		
i. Measurement parameters identified on data sets, imagery, and individual target RCS tables	See Comments		Notes 4 & 9
j. Display of mission route or maps containing information revealing location, scale of distance	U		

17. (XXX) DESIGN INFORMATION:

a. If information concerning limitations, deficiencies, vulnerabilities, or weaknesses that could impact on system survivability is revealed	S	OADR	Notes 3 & 9
b. If information concerning limitations, deficiencies, vulnerabilities, or weaknesses that could impact on system survivability is not revealed	U		

E. SECTION IV

SPECIFICATIONS

TOPIC	CLASS	DECLASS	COMMENT
18. SYSTEM AND SUB-SYSTEM SPECIFICA-TIONS:			
a. T&E activities and end products that reveal:			
• Specifications of (XXX) equipment or techniques that describe items but do not provide information regarding signature alteration, radar cross-sections, etc/as appropriate	U		
• Specifications of (XXX) equipment or techniques that describe items and provide information regarding signature alteration, radar cross-sections, etc./as appropriate	S	OADR	Note 9

F. SECTION V

CRITICAL ELEMENTS

TOPIC	CLASS	DECLASS	COMMENT
19. TEST & EVALUATION			
a. Activities that reveal test			
• The fact that equipment and techniques have the capability to alter or simulate signatures in any spectral band	S	OADR	

• Those features of equipment and techniques that provide levels of signature alteration or simulation	S	OADR	
b. The fact that equipment and techniques cause degradation in enemy target detection and recognition capability	U		
c. Quantitative data on actual degradation in detection and recognition range of target acquisition systems	S	OADR	
d. Conclusions regarding the current and/or projected impact on target detection and recognition capability	S	OADR	
e. New principles, procedures, or doctrine that reveals a break-through with significant military impact	S	OADR	
f. Operational concepts for implementation of CCD equipment and techniques	S	OADR	

20. DATA ACQUISITION:

a. Time Space Positioning Information (TSPI)	See Comments	Note 9
b. HUD systems data	See Comments	Note 9

21. AIRBORNE SENSORS AND INTELLIGENCE ASSETS:

G. SECTION VI
VULNERABILITIES AND WEAKNESSES

TOPIC	CLASS	DECLASS	COMMENT
22. (XXX) EQUIPMENT & TECHNIQUES:			
a. Instructions on how to (as appropriate, i.e. operate, assemble, erect, move or place) (XXX) equipment or when a vulnerability or weakness is indicated	S	OADR	
b. Current or projected (XXX) equipment and techniques that reveal vulnerabilities or weaknesses	S	OADR	
c. Information resulting from tests regarding current or projected (XXX) equipment or techniques, deployment concepts, or counter-countermeasures that reveal an enhancement or vulnerability	S	OADR	Note 3
23. DATA REDUCTION:			
a. Mathematical techniques and computer codes that are related to assessment of (XXX) vulnerabilities and weaknesses:			
• Aid in the solution, but do not predict signatures from physical data inputs	U		Note 8
• Predict signatures from physical data inputs if vulnerabilities are revealed	S	OADR	Note 9

• Include optimization routines for defining configuration shapes for low or minimal signatures	S	OADR	

24. SUPPORT EQUIPMENT:

a. Aircraft	See Comments	Note 9
b. Ground equipment	See Comments	Note 9

H. SECTION VII
HARDWARE

TOPIC	CLASS	DECLASS	COMMENT
25. HARDWARE:			
a. Hardware nomenclature	U		
b. Federal stock number	U		
c. Serial numbers	U		
d. Model designation	U		
e. (XXX) End item(s) (as appropriate)	See Comments		Note 5
f. Support aircraft (as appropriate)	See Comments		Notes 5 & 9
g. Ground support equipment (as appropriate)	See Comments		Notes 5 & 9
26. DATA PROCESSING EQUIPMENT:			
a. Specification/performance characteristics equipment or instrumentation used to collect, reduce, analyze, or present data or used to evaluate (XXX)	See Comments		Notes 1, 5 &11 (Information may be supplier proprietary)

I. SECTION VIII
ADMINISTRATIVE DATA

TOPIC	CLASS	DECLASS	COMMENT
27. GENERAL:			
a. (XXX) equipment and techniques except for those hardware and data items including signature measurements, photographs, drawings, and specifications	U		Note 5
b. Specialized (XXX) equipment and techniques for critical elements	S	OADR	
c. Orders to install, erect, or emplace individual items of (XXX) equipment			
• Pertaining to wartime measures that would indicate preparations against or for attack	S	OADR	
• If items do not pertain to wartime measures that would indicate preparations against or for attack	U		
d. Names and locations of (XXX) test program participants	U		Protect as FOUO
28. DEGREE OF PROTECTION IN TRANSIT/STORAGE/ PACKAGING:			
a. When the information reveals an operational deficiency/limitation	S	OADR	Note 12

b. When the information reveals a classified plan or operation	S	OADR	Note 12
c. When the information does not apply to (a) or (b)	U		

29. T&E PROGRAM:

a. Funding (individual contracts or projects, program, total T&E effort)	U		
b. Budget year, prior year(s), future fiscal year(s), or total dollars	U		
c. Quantities by budget or future fiscal year(s)	U		

30. PRODUCTION AND PROCUREMENT:

a. Contract delivery schedules of (XXX) equipment and material	U		Protect as FOUO
b. Delivery schedules for equipment and material needed in conduct of a test/project when information reveals operational deficiency/limitation or anticipated fielding plan for urgently needed or new technology system(s)	S	OADR	

J. SECTION IX

NOTES

1. Security classification must be determined by detailed considerations of all applicable elements. When partial information is presented, the lowest classification consistent with adequate protection will be assigned.

2. The establishment of security classification levels for the deployment data within a theater is the responsibility of the Theater Commander.

3. Any information revealing possible countermeasures and counter-countermeasures to U.S. military (XXX) equipment/systems will normally be classified SECRET. Any detailed discussion, report or study of system capabilities and/or limitations from which conclusions may be drawn that would suggest enemy tactics most likely to defeat U.S. equipment/systems and techniques will be classified SECRET.

4. Classify in accordance with source material or information revealed.

5. Equipment shall be safeguarded in accordance with the requirements for the category of information revealed by the equipment. Commercial equipment is normally unclassified. Specifically designed equipment and/or specifically designed equipment utilizing commercial equipment will be assigned a security classification commensurate with the performance characteristics or parameters of information that is revealed.

6. Security classification of computer programs, or segments thereof, shall be based on the classification of the information or parameters that can be revealed by the program. In order to accurately classify a particular program, review applicable SCGs and apply only that level of classification required to protect the parameters contained in the program. This note applies to interim and final products (tape, card deck, listings, etc.) as well as any software documentation that can reveal the classified data.

7. Reports, publications, drawings, schematics, photographs, models, mockups, training aids, and graphs will be assigned a security classification as determined by the appropriate application of this security classification guide and information revealed.

8. Unclassified items may become sensitive or classified when compiled. See individual sections for overall highest classification.

9. Consult appropriate classification guidelines that are applicable to unique U.S. Military aircraft, ground support equipment and systems, collection systems, facilities, computer programs, and operational tactics.

10. The relationship of data to telemetry, channel, calibration, raw telemetry, and frequency of operation shall be classified in accordance with the information that might be discernible from them. The telemetry encryption shall be SECRET and raw telemetry shall be unclassified. The relationship of raw telemetry to calibration is classified by the data revealed.

11. Classify end item in accordance with the highest classified item revealed.

12. Movement and storage of classified hardware between installation and activities will be accomplished in accordance with the provisions of DoD 5200.1R and DoD 5220.22M.

ANNEX K
MILESTONE REVIEWS

A. INTRODUCTION

The JTD should coordinate with DDT&E to review the progress of the joint test at the following milestones: when the JTF has been established and organized and the program issues have been verified; annual reviews of JT&E progress and results; and after Service coordination of the Joint Test final report. This annex provides guidance for these reviews in the form of examples of outlines for the milestone presentations. These examples of outlines should be tailored to the specific requirements to the JTF.

The first milestone review should be an In Progress Review (IPR) conducted by DDT&E after the JTF is organized and the program issues have been reviewed and validated as current and accurate. The second and third milestones should be annual TAB reviews of JT&E progress and results. The focus of these reviews should be on the technical aspects of the JT&E in terms of credibility and risks relative to resolution of the program issues. A final suggested milestone would be a TAB/DDT&E review of the JTF final report. This review should be conducted after the final report has been coordinated with all interested agencies. The focus of this final review should be the technical competency and credibility of the JTF conclusions and recommendations. Examples of outlines for these reviews are provided in the following sections.

B. AN EXAMPLE OF AN OUTLINE FOR THE FIRST MILESTONE REVIEW (IPR)

1.0 Introduction
1.1 Title/Nomination Organization/Agency
1.2 Lead Service/Executive Agency/JTD
1.3 Participating Services/Executive Agencies
1.4 Other Major Players
1.5 Purpose and Focus of Review (establishment of JTF and verification of the issues)

2.0 Background
2.1 Problem Statement
    2.1.1 Assumptions
    2.1.2 Constraints and Limitations
2.2 Joint Test
    2.2.1 Purpose
    2.2.2 Test Issues and Objectives

C. EXAMPLE OF AN OUTLINE FOR THE ANNUAL MILESTONE REVIEW OF JT&E ACTIVITY RESULTS

1.0 Introduction
1.1 Background and Relation of Test Activities to Program Issues
1.2 Purpose of Test Activity
1.3 Program Issues that were Addressed
1.4 Scope of Test Activities
    1.4.1 Assumptions
    1.4.2 Constraints and Limitations
1.5 Test Activity Scenarios

2.0 Description of Test Activities
2.1 Overview of Test Activities
    2.1.1 Location, Dates, and Durations
    2.1.2 Test Articles, Tactics, Procedures, and Concepts
    2.1.3 Participants
    2.1.4 Resource Requirements
    2.1.5 Instrumentation
2.2 Schedule
2.3 Control of Test Activities

3.0 Joint Test Results
3.1 Compliance with Test Activity Plans
3.2 Actual Data Collected (as compared to planned)
3.3 Completeness and Accuracy of Data Collected
3.4 Expected Results
3.5 Actual Results
3.6 Unexpected Results
3.7 Other Accomplishments

4.0 Problems and Solutions
4.1 Urgency of Need for Test Results
4.2 Systemic Problems and Solutions Employed
4.3 Unique or New Problems and Solutions Employed

5.0 Conclusions and Recommendations
5.1 Findings
5.2 Conclusions
5.3 Recommendations

D. EXAMPLE OF AN OUTLINE FOR FINAL MILESTONE REVIEW – JTF FINAL REPORT

1.0 Introduction
1.1 Background and Discussion of Problem
1.2 Purpose of JT&E
1.3 Program Issues
1.4 Program Scope
    1.4.1 Assumptions
    1.4.2 Constraints and Limitations
1.5 Program Scenario
1.6 Summary

2.0 Joint Test Description
2.1 Overview of JT&E
2.2 Program Issues and Objectives
    2.2.1 Coordination
    2.2.2 Test Measures
    2.2.3 Approach for Resolving Issues
    2.2.4 Test Methods
    2.2.5 Test Cells
    2.2.6 Overview of Test Activities
        2.2.6.1 Test Activity **1**
            · Location
            · Resource Requirements
            · Instrumentation Requirements
            · Environmental Considerations
        2.2.6.2 Test Activity **n**
2.3 Test Activity Schedule

3.0 Joint Test Results
3.1 Compliance with Program Test Design
3.2 Completeness and Accuracy of Data Collected
3.3 Expected Results (Issues that were Expected to be Resolved)
3.4 Actual Results (Issues that were Resolved)
3.5 Issues that can be Resolved by Others using Program Data
3.6 Unexpected Results
3.7 Other Accomplishments
3.8 Test Activity Products

4.0 Problems and Solutions
4.1 Urgency of Need for Test Results
4.2 Systemic Problems and Solutions

4.3   Unique or New Problems and Solutions

5.0   Findings, Conclusions, and Recommendations
5.1   OSD, Joint Staff, and Service Concurrence (Sensitivities or non concurrences)
5.2   Benefits of Participation
5.3   Findings
5.4   Conclusions
5.5   Recommendations
5.6   JTF Produced Products
5.7   Institutionalization of Products
        5.7.1 What, Who, Where, When, and How
        5.7.2 Oversight of Institutionalization actions

Annexes (as required to substantiate conclusions and recommendations)

ANNEX L

SUGGESTED REPORT OUTLINES PTP, DMPA, JT&E FINAL REPORT, AND JTF MANAGEMENT REPORT

A. INTRODUCTION

The following outlines for plans and reports are provided as examples of some used by previous JTFs. If used, the JTF should tailor these formats to the specific requirements of their joint test. In general, use of these or similar outlines could benefit the JTF as DDT&E and the TAB are familiar with the formats used by previous joint tests.

B. EXAMPLE OF AN OUTLINE FOR A PROGRAM TEST PLAN (IF REQUIRED)

This document should be an extension of the APA and should not include repetitive discussions of information or data adequately covered in the APA.

1.0 Introduction
1.1 Background and Discussion of Problem
1.2 Joint Feasibility Study
    1.2.1 Overview of APA
    1.2.2 JFS Conclusions
1.3 Purpose of JT&E
1.4 Program Issues
1.5 Program Scope/Assumptions/Limitations
1.6 Program Scenario

2.0 Program Description/Methodology
2.1 Overview of JT&E
2.2 Program Issues
    2.2.1 Coordination
    2.2.2 Test Measures
    2.2.3 Approach for Resolving Issues
    2.2.4 Test Methods
        2.2.4.1 Cost/Credibility of Results
        2.2.4.2 Availability/Technical Maturity
    2.2.5 Test Cells
        2.2.5.1 Controlled Variables
        2.2.5.2 Uncontrolled Variables
        2.2.5.3 Sample Sizes/Confidence Levels/Technical Significance

Annexes (as required to provide rationale used in the selection of methodologies, techniques, test methods, test activities, etc.).

A. Intelligence and Threat Assessment
B. Operations Security
C. Classified Evaluation Criteria
D. Detailed Systems Descriptions
E. Software Evaluations
F. Human Factors
G. Environmental Considerations
H. Weather

C. EXAMPLE OF AN OUTLINE FOR A PROGRAM LEVEL DMAP

1.0 Introduction
1.1 General
1.2 Background
1.3 Purpose
1.4 Schedule

2.0 Analysis Approach
2.1 Overview
2.2 Analysis Activities
2.3 Test Cell Matrix
2.4 Analysis of Issues
    2.4.1 Issue 1
    2.4.n Issue n
2.5 Data Requirements Analysis
    2.5.1 Measures
    2.5.2 Test Variables
    2.5.3 Participants
    2.5.4 Environments
    2.5.5 System Operations and Interactions

3.0 Data Requirements
3.1 General
3.2 Integrated Data Requirements List (IDRL)

4.0 Data Sources and Instrumentation
4.1 Test Activity 1
    4.1.1 Data Sources
    4.1.2 Instrumentation
4.2 Test Activity n
4.3 Unique Instrumentation

5.0 Data Collection, Transportation, and Storage
5.1 JTF Data Management Functions
    5.1.1 Library
    5.1.2 Media Identification and Control

6.0 Test Activities, Data Collection, and Management
6.1 Media Distribution, Collection, and Control
6.2 Security

7.0 Data Processing
7.1 Test Activities
    7.1.1 Quality Assurance
    7.1.2 Quick Look
    7.1.3 Reports
7.2 JTF Data Management Center (Library)
    7.2.1 Data Entry and Extraction
    7.2.2 Data Reconstruction and Verification
    7.2.3 Data Fusion
    7.2.4 Data Control

8.0 Data Base Structure
8.1 Connectivity
8.2 Hardware
8.3 Software

9.0 Analysis Support Products

D. EXAMPLE OF AN OUTLINE FOR A JT&E FINAL REPORT

Executive Summary
ES.1 Introduction
ES.2 Joint Test Approach
ES.3 Major Activities
ES.4 Joint Test Schedule
ES.5 Coordination Chain and Responses
ES.6 Conclusions and Recommendations
ES.7 JTF Products

1.0 Purpose and Background
1.1 Purpose of the JT&E
1.2 Authorizing Charter
1.3 JT&E Background
1.4 Description of Concept or Systems Tested

4.0   Problems and Solutions

5.0   Summary of JTF Conclusions and Recommendations
5.1   OSD, Joint Staff, and Service Coordination/Concurrence
5.2   Products
5.3   Benefits to Participants
5.4   Conclusions
5.5   Recommendations

Annexes (as required to substantiate conclusions and recommendations)
A.   Intelligence and Threat Assessment
B.   Operations Security
C.   Classified Evaluation Criteria
D.   Detailed Systems Descriptions
E.   Software Evaluations
F.   Human Factors
G.   Environmental Considerations
H.   Weather

E.   EXAMPLE OF AN OUTLINE FOR A JTF MANAGEMENT REPORT

Executive Summary
ES.1 Introduction
ES.2 Joint Test Approach
ES.3 Major Activities
ES.4 Lessons Learned

1.0   Introduction
1.1   Purpose of Report
1.2   Program Overview

2.0   Assessment of Accomplishments
2.1   Relative to First Chartered Mission
2.2   Relative to Second Chartered Mission
2.3   Relative to Third Chartered Mission
2.n Relative to n Chartered Mission

3.0   Lessons Learned
3.1   Lessons Learned that were Documented by Previous JTFs
    3.1.1 Lesson #1
    3.1.2 Lesson #2
    3.1.3 Lesson #3
    3.1.n Lesson #n

3.2   Lessons Learned that were Unique to this JTF
  3.2.1 Lesson #1
  3.2.2 Lesson #2
  3.2.3 Lesson #3
  3.2.n Lesson #n

4.0   Conclusions and Recommendations

4.1   Conclusions (1-n)

4.2   Recommendations (1-n)

ANNEX M
TECHNICAL ADVICE

A. INTRODUCTION

The JT&E Program receives advice from a number of technical organizations that are available to council JT&E Program directors and administrators, Joint Feasibility Study Directors, and Joint Test Directors on technical, test, and doctrinal issues related to the program in general and specific JT&Es in particular. These technical organizations include the JT&E Senior Advisory Council (SAC), the JT&E Technical Advisory Board (TAB), Technical Advisory Groups (TAG), General Officer Steering Committees (GOSC), and Functional Expert Panels. The following sections contain information and recommendations relative to when an advisory organization could be beneficial, who is responsible for establishing/providing advisory organizations, and how these advisory organizations can be used to reduce the risk associated with JT&E activities and events.

B. JT&E SENIOR ADVISORY COUNCIL (SAC)

The JT&E SAC is a senior-level advisory group that reviews candidates for entry into the JT&E Program, Joint Feasibility Study and Joint Test and Evaluation progress and results, and recommends appropriate actions to the D,T,SE&E. The Service members on the SAC also commit the personnel and resources required for the conduct of the JT&E activities. The SAC meets in June of each year or at the call of the Chairperson. The following organizations provide personnel who are permanent members of the SAC. A list of current SAC members is included in the JT&E Program handout entitled "Documents Related to JT&E Programs."

The JT&E SAC is composed of the following members:

Co chairperson: D,T,SE&E and DOT&E
OSD(PA&E)
OSD(S&SS)
Joint Staff (J-8)
ODCSOPS-FDZ
CNO(N-091)
OSD/C3I
OSD/SOLIC
USAF/TE
USMC Systems
Command-Chief of Staff
BMDO, TMD

Executive Advisor: Chairperson of JT&E Planning Committee

Technical Advisor: Chairperson of TAB (non-voting member)

The responsibilities of the JT&E SAC are as follows:

1. Recommend and prioritize candidates for entry into the JT&E Program.
2. Review JFS results in terms of:
   a. Need of proposed JT&Es.
   b. Proposed JT&E concepts and Program Test Designs.
   c. Feasibility of proposed JT&Es.
   d. Impact and availability of resource requirements.
   e. Availability of OSD and Service funds to support the proposed JT&Es.

f. Recommendations for lead and participating Services.

g. Anticipated improvements in joint capabilities.

h. Opportunities for proposed JT&Es to be incorporated into scheduled joint activities.

3. Establish schedules for JFSs and JT&Es.

4. Commit Service support and resources to JFSs and JT&Es.

5. Review and recommend JT&E Program management and policy changes.

6. Review JT&E final reports.

C. JT&E TECHNICAL ADVISORY BOARD (TAB)

The JT&E TAB is an organization of senior civilian scientists and engineers from OSD and the Services who advise the SAC, nomination sponsors, FSDs, and JTDs on the technical issues related to the JT&E Program in general and JFSs and JT&Es in particular. The nomination and selection of TAB members is based on current expertise and experience relative to the planning, conduct, and evaluation of large scale tests, exercises, and simulations. The TAB provides advice on JT&E nominations, monitors JT&E activities, and provides technical advice and guidance to FSDs and JTDs in order to minimize the risk and cost associated with JT&Es. The OSD and Services nominate qualified individuals for the TAB. The D,T,SE&E reviews the nominations for JT&E TAB membership and approves those considered to be most qualified. The TAB meets in May of each year or as directed by the Chairperson. A list of current JT&E TAB members is included in the JT&E Program handout entitled "Documents Related to JT&E Programs."

The JT&E TAB is composed of the following persons:

Chairperson: Rotated periodically among permanent members

Permanent members: One member from each of the Services

Non permanent members: Civilian scientists having specific technical expertise related to a particular JT&E and supported/participating CINC representatives, as appropriate

The responsibilities of the JT&E TAB are as follows:

1. Review and determine the technical adequacy of APAs and PTPs

2. Review and determine the technical adequacy of individual test plans, data management and evaluation plans, and test reports.

3. Provide technical recommendations to the JT&E SAC concerning JT&E Program candidates, JFSs, and JT&Es.

4. Assist in defining common elements among JT&Es, maximizing the possibility of resource sharing, minimizing the cost associated with JT&Es, and preserving significant residual assets developed in conjunction with JT&Es for future use. These residual assets are primarily scenarios, databases, computer simulations, algorithms, test facilities, instrumentation, and threat simulators.

5. When required, recommend personnel to staff TAGs for a JFS or JT&E.

6. Provide technical advice to the JT&E SAC, JFSs, and JTDs.

7. Provide recommendations to the DDT&E relative to the continuation or termination of JFSs and JT&Es.

D. TECHNICAL ADVISORY GROUP (TAG)

A TAG is a technical body formed to provide direct technical support to a JT&E. The JTD, with the coordination and approval of DDT&E, will determine if and when a TAG is required. TAG members may be nominated by the TAB, suggested by the Service Operational Test Agencies (OTAs) requested by the JTD, or suggested from other sources. The JTD will coordinated directly with the Service OTAs to obtain the services of TAG members. The composition of a TAG may vary as the technical nature of the JT&E changes. The TAG will meet at the call of the JTD and is not a permanent full-time part of the JT&E staff. The TAG may provide assistance either collectively or through the actions of individual members.

A TAG is composed of the following members:

If established, the TAG composition will be determined by the JTD and will normally be made up of individuals from the Services (usually senior civilians) who have technical proficiency particularly suited to the JT&E.

The responsibilities of a TAG are as follows:

1. Review and provide technical comments and recommendations on plans, analysis results, and test reports.
2. Assess appropriateness and output of simulations suggested or developed for a proposed JT&E or specific test events.
3. Identify sources of technical assistance and provide technical liaison with these sources.

4. Provide the JT&E TAB with technical advice and assistance as required.
5. Provide the JTD with technical advice and assistance as required.

E. GENERAL OFFICER STEERING COMMITTEE (GOSC)

A GOSC should be established to review and provide advice on JT&E issues pertaining to policy, doctrine, tactics, and resources. A GOSC is a group of general officers from the Services and participating theater CINCs who are invited by the JTD to advise on doctrine, policy, or tactics issues. The intent of a GOSC is to capture and integrate Service representation at a senior officer level. The JTD will determine if and when a GOSC is required. GOSC members may be nominated by the TAB, suggested by the Service OTAs, requested by the JTD, or suggested from other sources. The JTD will coordinate directly with the Service OTAs to obtain the services of GOSC members. The GOSC will meet at the call of the JTD and is not a permanent full-time part of the JT&E staff. The GOSC provides guidance either collectively or through the actions of individual members and should be included in the review cycle of JT&E produced concepts, products, and documents.

A GOSC is composed of the following members:

If established, the GOSC composition will be determined by the JTD and will normally be made up of flag officers (1-2 star level) from the Services involved in the JT&E, those providing test resources, or those who could be affected by the JT&E results and recommendations.

The responsibilities of a GOSC are as follows:

1. Provide the JTD with a forum for senior level advice and guidance with respect to Service policy, doctrine, and tactics.
2. Review PTP, test results, and reports.
3. Provide advice relative to the availability or resources and Service events to support planned activities.
4. Provide advice relative to coordination requirements and the identification of signature authorities.
5. Provide assistance in arranging meeting and briefing schedules.
6. Provide assistance in obtaining the use of Service assets and resources to include information or access to classified programs.

F. FUNCTIONAL EXPERT PANELS

If the JT&E involves issues, techniques, or equipment that are technically complex, the JTD may want to consider establishing Functional Expert Panels to obtain expertise or assistance that is not available within the JTF. Functional Expert Panels will involve the technical communities associated with the JT&E activities, and this involvement will be helpful in the coordination and acceptance of JT&E results. Functional Expert Panel members may be suggested by the TAB, the Service OTAs, other sources, or identified by the JTD. The JTD will coordinate with the Service OTAs to obtain the services of Functional Expert Panel members from Service resources. The JTD will coordinate with the OSD JT&E Coordinator to obtain the services of non DoD Functional Expert Panel members.

A Functional Expert Panel is composed of the following members:

If established, the Functional Expert Panel composition will be determined by the JTD and will be made up of members who are experts in the required specific test areas. Functional Expert Panel members can be Service members, Government Service employees, contractors, or in some instances, civilians.

The responsibilities of a Functional Expert Panel are as follows:

1. Provide direct technical expertise and assistance to the JT&E.
2. Leverage JTF expertise by involving the technical communities.
3. Assist in identifying and obtaining additional expertise when required.
4. Expand awareness of JT&E efforts to the technical communities.
5. Assist in coordination and acceptance of JT&E results and reports.
6. Assist in avoidance of the "not invented here" syndrome.

G. JT&E PLANNING COMMITTEE (JT&E PC)

The JT&E PC is a working group that assists in developing and evaluating JT&E nominations and preparing them for senior level review. The JT&E PC Chairperson is the OSD JT&E Coordinator. The JT&E PCs permanent membership is drawn from OSD, the Joint Staff, and the Services. The JT&E PC members interface with and represent their respective Services and agencies. The Services and agencies may send additional personnel to the JT&E PC meetings to provide additional information or assistance as may be required. The JT&E PC meets at the call of the Chairperson and serves as the action staff for the JT&E TAB and SAC.

The JT&E PC is composed of the following members:

Chairperson: OSD JT&E Coordinator
Permanent members: One member from DOT&E
One member from the Joint Staff
One member from each of the Services
One member from OSD/PA&E
Non permanent members: One representative from each agency submitting a nomination for consideration

The responsibilities of the JT&E PC are as follows:
1. Receive and prioritize JT&E Program nominations.
2. Review JT&E nominations to:
   a. Determine jointness, feasibility, and validity of potential results.
   b. Identify duplications and possible consolidations.
   c. Determine adequacy of data, resource estimates, and test objectives.
3. Recommend nominations by priority to the TAB for consideration.
4. Functions as the action staff for the JT&E TAB and SAC.